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<p>(21) International Application Number: PCT/US98/04493</p> <p>(22) International Filing Date: 6 March 1998 (06.03.98)</p> <p>(30) Priority Data:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">60/040,162</td> <td style="width: 40%;">7 March 1997 (07.03.97)</td> <td style="width: 30%;">US</td> </tr> <tr> <td>60/040,333</td> <td>7 March 1997 (07.03.97)</td> <td>US</td> </tr> <tr> <td>60/038,621</td> <td>7 March 1997 (07.03.97)</td> <td>US</td> </tr> <tr> <td>60/040,161</td> <td>7 March 1997 (07.03.97)</td> <td>US</td> </tr> <tr> <td>60/040,626</td> <td>7 March 1997 (07.03.97)</td> <td>US</td> </tr> <tr> <td>60/040,334</td> <td>7 March 1997 (07.03.97)</td> <td>US</td> </tr> <tr> <td>60/040,336</td> <td>7 March 1997 (07.03.97)</td> <td>US</td> </tr> <tr> <td>60/040,163</td> <td>7 March 1997 (07.03.97)</td> <td>US</td> </tr> <tr> <td>60/043,580</td> <td>11 April 1997 (11.04.97)</td> <td>US</td> </tr> <tr> <td>60/043,568</td> <td>11 April 1997 (11.04.97)</td> <td>US</td> </tr> </table> <p><i>(Continued on the following page)</i></p> <p>(71) Applicant (for all designated States except US): HUMAN GENOME SCIENCES, INC. [US/US]; 9410 Key West Avenue, Rockville, MD 20850 (US).</p> <p>(72) Inventors; and</p> <p>(75) Inventors/Applicants (for US only): RUBEN, Steven, M. [US/US]; 18528 Heritage Hills Drive, Olney, MD 20832 (US). ROSEN, Craig, A. [US/US]; 22400 Rolling Hills Road, Laytonsville, MD 20882 (US). FISCHER, Carrie, L. [US/US]; 5810 Hall Street, Burke, VA 22015 (US). SOPER, Daniel, R. [US/US]; 15050 Stillfield, Place, Centreville, VA 22020 (US). CARTER, Kenneth, C. [US/US]; 11601 Brandy Hall Lane, North Potomac, MD 20878 (US). BEDNARIK, Daniel, P. [US/US]; 8822 Blue Sea Drive, Columbia, MD 21046 (US). ENDRESS, Gregory, A. [US/US]; 9729 Clagett Farm Drive, Potomac, MD 20854 (US). YU, Guo-Liang [CN/US]; 13524 Straw Bale Lane, Darnestown, MD 20878 (US). NI, Jian [CN/US]; 5502 Manorfield Road, Rockville, MD 20853 (US). FENG, Ping [CN/US]; 4 Relda Court, Gaithersburg, MD 20878 (US). YOUNG, Paul, E. [US/US]; 122 Beckwith Street, Gaithersburg, MD 20878 (US). GREENE, John, M. [US/US]; 872 Diamond Drive, Gaithersburg, MD 20878 (US). FERRIE, Ann, M. [US/US]; 13203 L Astoria Hill Court, Germantown, MD 20874 (US). DUAN, Roxanne [US/US]; 4541 Fairfield Drive, Bethesda, MD 20814 (US). HU, Jing-Shan [CN/US]; 1247 Lakeside Drive #3034, Sunnyvale, CA 94086 (US). FLORENCE, Kimberly, A. [US/US]; 12805 Atlantic Avenue, Rockville, MD 20851 (US). OLSEN, Henrik, S. [DK/US]; 182 Kendrick Place #24, Gaithersburg, MD 20878 (US). EBNER, Reinhard [DE/US]; 9906 Shelburne Terrace #316, Gaithersburg, MD 20878 (US). BREWER, Laurie, A. [US/US]; 14920 Mount Nebo Road, Poolesville, MD 20837 (US). MOORE, Paul, A. [GB/US]; Apartment #104, 1908 Holly Ridge Drive, McLean, VA 22102 (US). SHI, Yanggu [CN/US]; 437 West Side Drive, Gaithersburg, MD 20878 (US). LAFLEUR, David, W. [US/US]; 1615 Q Street, N.W. #807, Washington, DC 20009 (US). LI, Yi [CN/US]; 1247 Lakeside Drive #3034, Sunnyvale, CA 94086 (US). ZENG, Zhizhen [CN/US]; 13950 Saddleview Drive, Gaithersburg, MD 20878 (US). KYAW, Hla [BU/US]; 520 Sugarbush Circle, Frederick, MD 21703 (US).</p> <p>(74) Agents: BROOKES, Anders, A. et al.; Human Genome Sciences, Inc., 9410 Key West Avenue, Rockville, MD 10850 (US).</p> <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p>			60/040,162	7 March 1997 (07.03.97)	US	60/040,333	7 March 1997 (07.03.97)	US	60/038,621	7 March 1997 (07.03.97)	US	60/040,161	7 March 1997 (07.03.97)	US	60/040,626	7 March 1997 (07.03.97)	US	60/040,334	7 March 1997 (07.03.97)	US	60/040,336	7 March 1997 (07.03.97)	US	60/040,163	7 March 1997 (07.03.97)	US	60/043,580	11 April 1997 (11.04.97)	US	60/043,568	11 April 1997 (11.04.97)	US
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<p>(54) Title: 186 HUMAN SECRETED PROTEINS</p> <p>(57) Abstract</p> <p>The present invention relates to 186 novel human secreted proteins and isolated nucleic acids containing the coding regions of the genes encoding such proteins. Also provided are vectors, host cells, antibodies, and recombinant methods for producing human secreted proteins. The invention further relates to diagnostic and therapeutic methods useful for diagnosing and treating disorders related to these novel human secreted proteins.</p>																																

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60/043,314	11 april 1997 (11.04.97)	US	60/047,596	23 May 1997 (23.05.97)	US	60/056,637	22 August 1997 (22.08.97)	US
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186 Human Secreted Proteins

Field of the Invention

This invention relates to newly identified polynucleotides and the polypeptides encoded by these polynucleotides, uses of such polynucleotides and polypeptides, and
5 their production.

Background of the Invention

Unlike bacterium, which exist as a single compartment surrounded by a membrane, human cells and other eucaryotes are subdivided by membranes into many functionally distinct compartments. Each membrane-bounded compartment, or
10 organelle, contains different proteins essential for the function of the organelle. The cell uses "sorting signals," which are amino acid motifs located within the protein, to target proteins to particular cellular organelles.

One type of sorting signal, called a signal sequence, a signal peptide, or a leader sequence, directs a class of proteins to an organelle called the endoplasmic reticulum
15 (ER). The ER separates the membrane-bounded proteins from all other types of proteins. Once localized to the ER, both groups of proteins can be further directed to another organelle called the Golgi apparatus. Here, the Golgi distributes the proteins to vesicles, including secretory vesicles, the cell membrane, lysosomes, and the other organelles.

Proteins targeted to the ER by a signal sequence can be released into the
20 extracellular space as a secreted protein. For example, vesicles containing secreted proteins can fuse with the cell membrane and release their contents into the extracellular space - a process called exocytosis. Exocytosis can occur constitutively or after receipt of a triggering signal. In the latter case, the proteins are stored in secretory vesicles (or
25 secretory granules) until exocytosis is triggered. Similarly, proteins residing on the cell membrane can also be secreted into the extracellular space by proteolytic cleavage of a "linker" holding the protein to the membrane.

Despite the great progress made in recent years, only a small number of genes encoding human secreted proteins have been identified. These secreted proteins include
30 the commercially valuable human insulin, interferon, Factor VIII, human growth hormone, tissue plasminogen activator, and erythropoietin. Thus, in light of the pervasive role of secreted proteins in human physiology, a need exists for identifying and characterizing novel human secreted proteins and the genes that encode them. This knowledge will allow one to detect, to treat, and to prevent medical disorders by using
35 secreted proteins or the genes that encode them.

Summary of the Invention

The present invention relates to novel polynucleotides and the encoded polypeptides. Moreover, the present invention relates to vectors, host cells, antibodies, and recombinant methods for producing the polypeptides and polynucleotides. Also provided are diagnostic methods for detecting disorders related to the polypeptides, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying binding partners of the polypeptides.

Detailed Description

Definitions

The following definitions are provided to facilitate understanding of certain terms used throughout this specification.

In the present invention, "isolated" refers to material removed from its original environment (e.g., the natural environment if it is naturally occurring), and thus is altered "by the hand of man" from its natural state. For example, an isolated polynucleotide could be part of a vector or a composition of matter, or could be contained within a cell, and still be "isolated" because that vector, composition of matter, or particular cell is not the original environment of the polynucleotide.

In the present invention, a "secreted" protein refers to those proteins capable of being directed to the ER, secretory vesicles, or the extracellular space as a result of a signal sequence, as well as those proteins released into the extracellular space without necessarily containing a signal sequence. If the secreted protein is released into the extracellular space, the secreted protein can undergo extracellular processing to produce a "mature" protein. Release into the extracellular space can occur by many mechanisms, including exocytosis and proteolytic cleavage.

As used herein, a "polynucleotide" refers to a molecule having a nucleic acid sequence contained in SEQ ID NO:X or the cDNA contained within the clone deposited with the ATCC. For example, the polynucleotide can contain the nucleotide sequence of the full length cDNA sequence, including the 5' and 3' untranslated sequences, the coding region, with or without the signal sequence, the secreted protein coding region, as well as fragments, epitopes, domains, and variants of the nucleic acid sequence. Moreover, as used herein, a "polypeptide" refers to a molecule having the translated amino acid sequence generated from the polynucleotide as broadly defined.

In the present invention, the full length sequence identified as SEQ ID NO:X was often generated by overlapping sequences contained in multiple clones (contig

analysis). A representative clone containing all or most of the sequence for SEQ ID NO:X was deposited with the American Type Culture Collection ("ATCC"). As shown in Table 1, each clone is identified by a cDNA Clone ID (Identifier) and the ATCC Deposit Number. The ATCC is located at 12301 Park Lawn Drive, Rockville, Maryland 20852, USA. The ATCC deposit was made pursuant to the terms of the Budapest Treaty on the international recognition of the deposit of microorganisms for purposes of patent procedure.

A "polynucleotide" of the present invention also includes those polynucleotides capable of hybridizing, under stringent hybridization conditions, to sequences contained in SEQ ID NO:X, the complement thereof, or the cDNA contained within the clone deposited with the ATCC. "Stringent hybridization conditions" refers to an overnight incubation at 42° C in a solution comprising 50% formamide, 5x SSC (750 mM NaCl, 75 mM sodium citrate), 50 mM sodium phosphate (pH 7.6), 5x Denhardt's solution, 10% dextran sulfate, and 20 µg/ml denatured, sheared salmon sperm DNA, followed by washing the filters in 0.1x SSC at about 65°C.

Also contemplated are nucleic acid molecules that hybridize to the polynucleotides of the present invention at lower stringency hybridization conditions. Changes in the stringency of hybridization and signal detection are primarily accomplished through the manipulation of formamide concentration (lower percentages of formamide result in lowered stringency); salt conditions, or temperature. For example, lower stringency conditions include an overnight incubation at 37°C in a solution comprising 6X SSPE (20X SSPE = 3M NaCl; 0.2M NaH₂PO₄; 0.02M EDTA, pH 7.4), 0.5% SDS, 30% formamide, 100 ug/ml salmon sperm blocking DNA; followed by washes at 50°C with 1XSSPE, 0.1% SDS. In addition, to achieve even lower stringency, washes performed following stringent hybridization can be done at higher salt concentrations (e.g. 5X SSC).

Note that variations in the above conditions may be accomplished through the inclusion and/or substitution of alternate blocking reagents used to suppress background in hybridization experiments. Typical blocking reagents include Denhardt's reagent, BLOTTO, heparin, denatured salmon sperm DNA, and commercially available proprietary formulations. The inclusion of specific blocking reagents may require modification of the hybridization conditions described above, due to problems with compatibility.

Of course, a polynucleotide which hybridizes only to polyA+ sequences (such as any 3' terminal polyA+ tract of a cDNA shown in the sequence listing), or to a

complementary stretch of T (or U) residues, would not be included in the definition of "polynucleotide," since such a polynucleotide would hybridize to any nucleic acid molecule containing a poly (A) stretch or the complement thereof (e.g., practically any double-stranded cDNA clone).

5 The polynucleotide of the present invention can be composed of any polyribonucleotide or polydeoxribonucleotide, which may be unmodified RNA or DNA or modified RNA or DNA. For example, polynucleotides can be composed of single- and double-stranded DNA, DNA that is a mixture of single- and double-stranded regions, single- and double-stranded RNA, and RNA that is mixture of single- and double-stranded regions, hybrid molecules comprising DNA and RNA that may be
10 single-stranded or, more typically, double-stranded or a mixture of single- and double-stranded regions. In addition, the polynucleotide can be composed of triple-stranded regions comprising RNA or DNA or both RNA and DNA. A polynucleotide may also contain one or more modified bases or DNA or RNA backbones modified for stability
15 or for other reasons. "Modified" bases include, for example, tritylated bases and unusual bases such as inosine. A variety of modifications can be made to DNA and RNA; thus, "polynucleotide" embraces chemically, enzymatically, or metabolically modified forms.

 The polypeptide of the present invention can be composed of amino acids joined
20 to each other by peptide bonds or modified peptide bonds, i.e., peptide isosteres, and may contain amino acids other than the 20 gene-encoded amino acids. The polypeptides may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. Such modifications are well described in basic texts and in more detailed monographs,
25 as well as in a voluminous research literature. Modifications can occur anywhere in a polypeptide, including the peptide backbone, the amino acid side-chains and the amino or carboxyl termini. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given polypeptide. Also, a given polypeptide may contain many types of modifications. Polypeptides may be
30 branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a
35 nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphatidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine,

formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth Enzymol 182:626-646 (1990); Rattan et al., Ann NY Acad Sci 663:48-62 (1992).)

"SEQ ID NO:X" refers to a polynucleotide sequence while "SEQ ID NO:Y" refers to a polypeptide sequence, both sequences identified by an integer specified in Table 1.

"A polypeptide having biological activity" refers to polypeptides exhibiting activity similar, but not necessarily identical to, an activity of a polypeptide of the present invention, including mature forms, as measured in a particular biological assay, with or without dose dependency. In the case where dose dependency does exist, it need not be identical to that of the polypeptide, but rather substantially similar to the dose-dependence in a given activity as compared to the polypeptide of the present invention (i.e., the candidate polypeptide will exhibit greater activity or not more than about 25-fold less and, preferably, not more than about tenfold less activity, and most preferably, not more than about three-fold less activity relative to the polypeptide of the present invention.)

Polynucleotides and Polypeptides of the Invention

FEATURES OF PROTEIN ENCODED BY GENE NO: 1

This gene is expressed primarily in testes tumor and to a lesser extent in fetal brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer particularly of the testes, and defects of the central nervous system such as seizure and neurodegenerative disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly cancer of the testes and central nervous system,

expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., testes and other reproductive tissue, brain and other tissue of the nervous system, and blood cells, and spleen, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of testicular cancer and treatment of central nervous system disorders since this gene is primarily expressed in the testes tumor and developing brain.

FEATURES OF PROTEIN ENCODED BY GENE NO: 2

This gene is expressed primarily in cancer tissues, such as breast cancer and Wilm's tumor, and to a lesser extent in fetal tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, and/or tumors, particularly, those found in the breast, and developmental abnormalities or disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the glandular tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., mammary tissue, and fetal tissue and, cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 314 as residues: Pro-11 to Thr-18, Leu-43 to Pro-50, Gly-64 to Leu-72, and Leu-81 to Lys-86.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of cancers and/or tumors, particularly, those found in the breast since expression is mainly in cancer/tumor tissues. May serve as therapeutic proteins for proliferation/differentiation of fetal tissues.

FEATURES OF PROTEIN ENCODED BY GENE NO: 3

This gene is expressed primarily in CD34 depleted buffy coat and to a lesser extent in spleen, chronic lymphocytic leukemia.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: blood disorders or leukemias, diseases of the immune system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for
10 differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and spleen, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or
15 cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of blood disorders or
20 leukemias, diseases of the immune system since expression is in tissues related to immune function.

FEATURES OF PROTEIN ENCODED BY GENE NO: 4

This gene is expressed primarily in CD34 depleted buffy coat.

25 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: blood disorders or lymphocytic diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification
30 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual
35 having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of blood disorders since expression is in tissues related to immune function.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 5

This gene is expressed primarily in CD34 depleted buffy coat.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: blood or immune
10 diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and cancerous
15 and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 317 as residues:
20 Pro-13 to Lys-21.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of blood disorders since expression is in tissues related to immune function.

25 FEATURES OF PROTEIN ENCODED BY GENE NO: 6

This gene is expressed primarily in CD34 depleted buffy coat.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: blood or immune
30 diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., and blood cells, and
35 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level

in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 318 as residues: Lys-31 to Lys-39.

- 5 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of blood diseases since it is expressed in tissues related to immune function.

FEATURES OF PROTEIN ENCODED BY GENE NO: 7

- 10 This gene is expressed primarily in CD34 depleted buffy coat and to a lesser extent in pineal gland.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: diseases of the immune system and brain associated diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and pineal gland, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- 25 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of blood disorders, immune diseases or brain associated diseases (specifically of the pineal gland) since expression is in tissues related to immune function.

FEATURES OF PROTEIN ENCODED BY GENE NO: 8

- 30 The translation product of this gene shares sequence homology with an organic cation transporter which is thought to be important in organic cation uptake in the kidney and liver. (See Accession No. 2343059.) Preferred polypeptide fragments comprise the amino acid sequence ITIAIQMICLVNXELYPTFVRNXGVMVCSSLCDIGGIITP FIVFRLREVWQALPLILFAVLGLLAAGVTLLLPETKGVALPETMKDAENLGRKAKPKENTIYLLK VQTSEPSGT (SEQ ID NO: 615) or TMKDAENLGRKAKPKENT (SEQ ID NO: 616) as well as N-terminal and C-terminal deletions of these fragments. Also preferred are polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed primarily in liver.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: hepatic and renal diseases where drug elimination/cation exchange (organic cation uptake) in the liver and kidney are problematic. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hepatic or renal system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., kidney and liver, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 320 as residues: Asn-64 to Asn-74, and Gln-81 to Gly-87.

The tissue distribution and homology to organic cation transporter indicate that polynucleotides and polypeptides corresponding to this gene are useful as a polyspecific transporter that is important for drug elimination in the liver (and possibly kidney) since expression is found in the liver.

FEATURES OF PROTEIN ENCODED BY GENE NO: 9

This gene is expressed primarily in eosinophil induced with IL-5 and to a lesser extent in fetal liver and spleen. This gene also maps to chromosome 15, and therefore can be used in linkage analysis as a marker for chromosome 15.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: diseases of the immune system, particularly allergies or asthma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, liver, and spleen, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the

standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating/diagnosis of diseases involving eosinophil reactions since expression seems to be concentrated in eosinophils and other tissues involved in immunity such as the liver and spleen.

FEATURES OF PROTEIN ENCODED BY GENE NO: 10

This gene is expressed primarily in tissues of hematopoietic lineage and to a lesser extent in Hodgkins lymphoma. Any frame shifts in this sequence can easily be clarified using known molecular biology techniques.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, and immune deficiency or dysfunction. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., hematopoietic cells, lymphoid and reticuloendothelial tissues, and cancerous tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/ diagnosis for lymphomas or immune dysfunction or as a therapeutic protein useful in immune modulation based on expression in anergic T-cells and lymphomas.

30 FEATURES OF PROTEIN ENCODED BY GENE NO: 11

This gene is expressed primarily in neutrophils and to a lesser extent in activated lymphoid cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the cell type present in a biological sample and for diagnosis of diseases and conditions: inflammation. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders

of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells and lymphoid tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another
5 tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 323 as residues: Glu-40 to Lys-46.

The tissue distribution indicates that polynucleotides and polypeptides
10 corresponding to this gene are useful for modulation of an immune reaction or as a growth factor for the differentiation or proliferation of neutrophils for the treatment of neutropenia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 12

15 This gene is expressed primarily in brain and to a lesser extent in activated T-cells. It is likely that the open reading frame containing the predicted signal peptide continues in the 5' direction. Preferred polypeptide fragments comprise the amino acid sequence PRVRNSPEDLGLSLTGDSCKL (SEQ ID NO:617).

Therefore, polynucleotides and polypeptides of the invention are useful as
20 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neurodegenerative disorders including ischemic shock, alzheimers and cognitive disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a
25 number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and brain, and other tissue of the nervous system and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from
30 an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 324 as residues: Ser-5 to Glu-14, Ile-21 to Pro-35, Ser-65 to Asp-81, Cys-89 to Val-96, Lys-136 to Ser-145, Ile-152 to Met-169, and Arg-189 to Lys-196.

35 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnostic/treatment for cancers of the given tissue or in the treatment of neurological disorders of the CNS.

FEATURES OF PROTEIN ENCODED BY GENE NO: 13

This gene was also recently cloned by other groups, naming this calcium-activated potassium channel gene, hKCa4. (See Accession No. AF033021, see also, Accession
 5 No. 2584866.) This gene is mapped to human chromosome 19q13.2. A second signal sequence likely exists upstream from the predicted signal sequence as described in Table 1. Preferred polypeptide fragments comprise: QADDLQATVAALCVLRGGGPWAG SWLSPKTPGAMGGDLVLGLGALRRRKRL (SEQ NO: 618); or EQEKSLAGWALVLAXXGIGL MVLHAEMLWFGGCSAVNATGHLSDTLWLIPITFLTIGYGDVVPGTMWGKIVCLCTGVMGVCC
 10 TALLVAVVARKLEFNKAIEKHVHNFMMDIQYTKEMKESAAARVLQEAWMFYKHTRRKESHAAR XHQRXLLAAINAFRQVRLKHKRLREQVNSMVDISKMHMILYDLQQNLSSSHRALEKQIDTLAG KLDALTELLSTALGPRQLPEPSQQSK (SEQ ID NO: 619), as well as N-terminal and C-terminal deletions. Also preferred are polynucleotide fragments encoding these polypeptide fragments.

15 This gene is expressed primarily in breast lymph node and T-cells, and to a lesser extent in placenta.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: hematologic and
 20 immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., lymphoid
 25 tissue, blood cells and placenta, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a
 30 sequence shown in SEQ ID NO. 325 as residues: Arg-13 to Lys-23.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment/diagnosis of hematologic and diseases involving immune modulation based on distribution in the lymph node and T-cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 14

This gene was recently cloned by another group, calling it PAPS synthase. (See Accession No. e1204135.) Preferred polypeptide fragments comprise the amino acid sequence YQAHHVS RNKRGQVVGTRGGFRGCTVWLTGLSGAGK (SEQ ID NO: 620).

5 Also preferred are the polynucleotide fragments encoding this polypeptide fragment.

It has been discovered that this gene is expressed primarily in benign prostate hyperplasia, Human Umbilical Vein Endothelial Cells and to a lesser extent in smooth muscle and Human endometrial stromal cells-treated with estradiol.

Therefore, polynucleotides and polypeptides of the invention are useful as
10 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: inflammation, ischemia, and restenosis, based on endothelial cell and smooth muscle cell expression, and prostate diseases such as benign prostate hyperplasia or prostate cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing
15 immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the prostate or vessels of the circulatory system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., prostate, endothelial cells, smooth muscle, and endometrium, and cancerous and wounded tissues) or bodily
20 fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 326 as residues: Arg-21 to Asp-26, Lys-35 to Lys-44,
25 Glu-49 to Asn-58.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating/diagnosing diseases or conditions where the endothelial cell lining of the veins and arteries of underlying smooth muscle are involved.

30

FEATURES OF PROTEIN ENCODED BY GENE NO: 15

This gene is expressed primarily in human 6 week embryo and to a lesser extent in placenta.

Therefore, polynucleotides and polypeptides of the invention are useful as
35 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: developmental anomalies or fetal deficiencies. Similarly, polypeptides and antibodies directed to these

polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly developmental in nature, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., embryonic
5 tissue, and placenta, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID
10 NO. 327 as residues Lys-50 to Glu-57.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for detection of developmental abnormalities.

FEATURES OF PROTEIN ENCODED BY GENE NO: 16

15 This gene is expressed primarily in kidney and amygdala and to a lesser extent in fetal tissues. This gene is mapped to chromosome 14, and therefore is useful in linkage analysis as a marker for chromosome 14.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) present in a biological sample and
20 for diagnosis of diseases and conditions: kidney diseases, neurological disorders and developmental abnormalities. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s). For a number of disorders of the above tissues, particularly of the renal system or developing fetal tissues, expression of this gene at significantly higher or
25 lower levels may be routinely detected in certain tissues and cell types (e.g., kidney, amygdala, and fetal tissues, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
30 individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment or diagnosis of conditions affecting the brain, kidneys and fetal development.

35 FEATURES OF PROTEIN ENCODED BY GENE NO: 17

This gene is expressed primarily in ovarian cancer.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: solid tumors similar to ovarian cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., ovarian and other reproductive tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 329 as residues Ser-51 to Val-56.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment of solid tumors of the reproductive system such as ovarian cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 18

This gene is expressed primarily in brain medulloblastoma. Preferred polypeptide fragments comprise the amino acid sequence: IRHEQHPNFSLEMHSGSSLLFLPQL ILILPVCAHLHEELNC (SEQ ID NO: 643) and SFFISEEKGHLLLQAERHPWVAGALVGVSGLTLTTCSGPTEKPA TKNYFLKRLQEMHIRAN (SEQ ID NO: 644), as well as N-terminal and C-terminal deletions. Also preferred are polynucleotide fragments encoding these polypeptide fragments.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumors particularly of the CNS or Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the Central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene

expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating medulloblastoma or similar tumors.

5

FEATURES OF PROTEIN ENCODED BY GENE NO: 19

This gene is expressed primarily in adipocytes.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: obesity. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the adipose tissues expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., adipocytes and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating obesity by regulating the function and number of adipocytes

FEATURES OF PROTEIN ENCODED BY GENE NO: 20

This gene is expressed primarily in B cell lymphoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, of the immune system with an emphasis on B cell lymphoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the tumors of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and lymphoid tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,

the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of B cell derived tumors based on its expression in b cell lymphomas

FEATURES OF PROTEIN ENCODED BY GENE NO: 21

This gene is expressed primarily in immune cells and to a lesser extent in fetal tissues

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: inflammatory diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., cells of the immune system, and fetal tissues, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO:333 as residues Asp-10 to Pro-19, Ser-74 to Tyr-79, Glu-95 to Lys-110.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of diseases involving alterations in T cell activity.

FEATURES OF PROTEIN ENCODED BY GENE NO: 22

It has been discovered that this gene is expressed primarily in ovarian tumor.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumors particularly of the ovary. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of tumors of the reproductive organs. expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., ovarian

and other reproductive tissue and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 334 as residues: Leu-22 to Gln-27.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of ovarian tumors as it has only been identified in ovarian tumors.

FEATURES OF PROTEIN ENCODED BY GENE NO: 23

It has been discovered that this gene is expressed primarily in fetal tissues and to a lesser extent in osteoclastoma cell line

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: osteoporosis or arthritis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the skeletal expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., bone cells, and fetal tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of conditions of abnormal bone remodeling due to enhanced activity of osteoclasts. This may be useful as a specific marker for malignancies derived from osteoclasts or their precursors.

FEATURES OF PROTEIN ENCODED BY GENE NO: 24

The translation product of this gene shares sequence homology with a periplasmic ribonuclease which is thought to be important in degrading extracellular polynucleotides

It has been discovered that this gene is expressed primarily in serum treated smooth muscle cells

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: vascular disease such as restenosis. Similarly, polypeptides and antibodies directed to these polypeptides are
5 useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the vasculature expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., smooth muscle, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or
10 spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 336 as residues: Gln-30 to Lys-36, and Pro-41 to Arg-48.

15 The tissue distribution and homology to ribonucleases indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment of pathological conditions of smooth muscle associated with bacterial or viral infiltration

FEATURES OF PROTEIN ENCODED BY GENE NO: 25

20 This gene is expressed primarily in Early Stage Human Brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: human brain development and related diseases. Similarly, polypeptides and antibodies directed to
25 these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the human brain development and related diseases, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and
30 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

35 The tissue distribution and homology to this gene indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of diseases affecting human brain development and related diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 26

It has been discovered that this gene is expressed primarily in human brain tissue.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: human brain diseases and other diseases related to brain diseases, which may be caused by brain diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in
10 providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the human brain diseases, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum,
15 plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

 The tissue distribution and homology to the gene indicate that polynucleotides
20 and polypeptides corresponding to this gene are useful for diagnosis and treatment of human brain diseases and other diseases related.

FEATURES OF PROTEIN ENCODED BY GENE NO: 27

It has been discovered that this gene is expressed primarily in Anergic T-cells.

25 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: immune diseases, inflammatory diseases and diseases related to T lymph cells. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological
30 probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune diseases, inflammatory diseases and diseases related to T lymph cells, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and cancerous and wounded tissues) or bodily fluids (e.g.,
35 serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene

expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- The tissue distribution and homology to the gene indicate that polynucleotides and polypeptides corresponding to this gene are useful for immune diseases, inflammatory diseases and diseases related to T lymph cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 28

- The translation product of this gene shares sequence homology with *Shigella flexneri* positive transcriptional regulator CriR (criR) gene which is thought to be important in regulation of gene expression.

This gene is expressed primarily in human synovial sarcoma and normal human brain tissues.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: human brain diseases particularly sarcomas of the synovium. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the human brain and synovium and other related human brain diseases, expression of this gene at significantly higher or lower levels may be routinely detected in certain (e.g., synovial tissue, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of human synovial sarcoma and other related human brain diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 29

This gene is expressed in bone marrow, infant brain, fetal liver and spleen, prostate and to a lesser extent in pineal gland, adipose tissue, kidney, adrenal gland, umbilical vein endothelial cells, and T cells.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: diseases related to bone marrow or

hematoplasic tissues, prostate, kidney, adrenal gland, and cardiovascular tissue or organs. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the diseases related to hematoplasic tissues, immune system, prostate, kidney, adrenal gland, and cardiovascular tissue or organs, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., bone marrow, hematopoietic cells, pineal gland, adipose tissue, kidney, adrenal gland, endothelial cells, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to the gene indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of diseases related to hematoplasic tissues, immune system, prostate, kidney, adrenal gland, and cardiovascular tissue or organs.

FEATURES OF PROTEIN ENCODED BY GENE NO: 30

This gene is expressed primarily in meningea and to a lesser extent in breast and adult brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: Diseases of the meningea and related brain diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the meningea and related brain diseases, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., meningea, mammary tissue, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of diseases of the meningea and related brain diseases.

5 **FEATURES OF PROTEIN ENCODED BY GENE NO: 31**

This gene is expressed in meningea, fetal spleen, osteoblast and to a lesser extent in activated T-cells, endometrial stromal cells, fetal lung, HL-60, thymus, testis and endothelial cells.

Therefore, polynucleotides and polypeptides of the invention are useful as
10 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: meningeal disease, osteoporosis, immune diseases, and hematoplastic diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for identification of the tissue(s) or cell type(s). For a number of disorders of the
15 above tissues or cells, particularly of the meningeal diseases, osteoporosis, immune diseases, and hematoplastic diseases, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, endometrium, lung, thymus, testis, and endothelial cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal
20 fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to gene indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of
25 meningeal, osteoporosis, immune diseases, hematoplastic diseases, testis diseases and lung diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 32

This gene is expressed primarily in human thymus and to a much lesser extent
30 in infant brain, T-cells, smooth muscle, endothelial cells, bone marrow, human ovarian tumor and keratinocytes testes, osteoclastoma, breast, and tonsils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: Diseases involving the
35 thymus, particularly thymic cancer and diseases involving T-cell maturation. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a

number of disorders of the above tissues or cells, particularly of the thymus, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., thymus, brain, and other tissue of the nervous system, blood cells, bone marrow, ovaries, and testes, and other reproductive tissue, mammary tissue, tonsils, melanocytes and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

10 The tissue distribution and homology to gene indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of diseases of the thymus particularly thymic cancer and diseases involving T-cell maturation.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 33**

 This gene is expressed primarily in human tonsils, and placenta, and to a lesser extent in adipocytes, melanocyte, and infant brain.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: inflammatory diseases, immune diseases, and obesity. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the inflammatory diseases, immune diseases, and obesity, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., tonsils, placenta, adipocytes, melanocytes, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

 The tissue distribution and homology to this gene indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of diseases such as inflammation, immune diseases, and obesity.

FEATURES OF PROTEIN ENCODED BY GENE NO: 34

This gene is expressed in activated T cells, and to a lesser extent in pituitary, testis, and breast lymph node.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: diseases relating to T cells. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the
10 disorders of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., pituitary, testes and other reproductive tissue, mammary tissue, and lymphoid tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a
15 disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of immune disorders.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 35

This gene is expressed primarily in infant brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neurological disorders.
25 Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the diseases relating to neurological disorders, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g.,
30 brain, and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

35 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of neurological disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 36

This gene is expressed primarily in infant brain.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: neurological disorders.
Similarly, polypeptides and antibodies directed to these polypeptides are useful in
providing immunological probes for differential identification of the tissue(s) or cell
type(s). For a number of disorders of the above tissues or cells, particularly of the
10 diseases relating to neurological disorders, expression of this gene at significantly
higher or lower levels may be routinely detected in certain tissues and cell types (e.g.,
brain and other tissue of the nervous system, and cancerous and wounded tissues) or
bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another
tissue or cell sample taken from an individual having such a disorder, relative to the
15 standard gene expression level, i.e., the expression level in healthy tissue or bodily
fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for diagnosis and treatment of neurological
disorders.

20

FEATURES OF PROTEIN ENCODED BY GENE NO: 37

This gene is expressed primarily in human ovary.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
25 biological sample and for diagnosis of diseases and conditions: ovarian cancer.
Similarly, polypeptides and antibodies directed to these polypeptides are useful in
providing immunological probes for differential identification of the tissue(s) or cell
type(s). For a number of disorders of the above tissues or cells, particularly of the
ovarian disorders such as those involving germ cells, ovarian follicles, stromal cells,
30 expression of this gene at significantly higher or lower levels may be routinely detected
in certain tissues and cell types (e.g., ovary and other reproductive tissue, and
cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
fluid or spinal fluid) or another tissue or cell sample taken from an individual having
such a disorder, relative to the standard gene expression level, i.e., the expression level
35 in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for diagnosis and treatment of ovarioathy.

FEATURES OF PROTEIN ENCODED BY GENE NO: 38

This gene is expressed primarily in lymph node breast cancer.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: breast cancer. Similarly,
polypeptides and antibodies directed to these polypeptides are useful in providing
immunological probes for differential identification of the tissue(s) or cell type(s). For a
number of disorders of the above tissues or cells, particularly of the breast cancer,
10 expression of this gene at significantly higher or lower levels may be routinely detected
in certain tissues and cell types (e.g., mammary tissue and lymphoid tissue, and
cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
fluid or spinal fluid) or another tissue or cell sample taken from an individual having
such a disorder, relative to the standard gene expression level, i.e., the expression level
15 in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for used as a diagnostic marker for breast cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 39

20 This gene is expressed primarily in brain and to a lesser extent in other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: neuronal disorders such
as trauma, brain degeneration, and brain tumor. Similarly, polypeptides and antibodies
25 directed to these polypeptides are useful in providing immunological probes for
differential identification of the tissue(s) or cell type(s). For a number of disorders of
the above tissues or cells, particularly of the brain, expression of this gene at
significantly higher or lower levels may be routinely detected in certain tissues and cell
types (e.g., brain and other tissue of the nervous system, and cancerous and wounded
30 tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
another tissue or cell sample taken from an individual having such a disorder, relative to
the standard gene expression level, i.e., the expression level in healthy tissue or bodily
fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
35 corresponding to this gene are useful for diagnosis and therapeutic treatment of
neuronal disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 40

This gene is expressed in early stage human embryo, adrenal gland tumor, and
5 immune tissues such as fetal liver, fetal spleen, T-cell, and myeloid progenitor cell line
and to a lesser extent in ovary, colon cancer, and a few other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: tumorigenesis including
10 adrenal gland tumor, colon cancer and various other tumors, developmental and
immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides
are useful in providing immunological probes for differential identification of the
tissue(s) or cell type(s). For a number of disorders of the above tissues or cells,
particularly of the cancer tissues, early stage human tissues, and immune system,
15 expression of this gene at significantly higher or lower levels may be routinely detected
in certain tissues and cell types (e.g., liver, spleen, blood cells, bone marrow, ovary
and other reproductive tissue, and colon, and cancerous and wounded tissues) or bodily
fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or
cell sample taken from an individual having such a disorder, relative to the standard
20 gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for diagnosis and therapeutic treatment of immune
and developmental disorders, and tumorigenesis.

25

FEATURES OF PROTEIN ENCODED BY GENE NO: 41

This gene is expressed primarily in fetal lung, endothelial cells, liver, thymus
and a few other immune tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as
30 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: immune disorders such
as immune deficiency and autoimmune diseases, pulmonary diseases, liver diseases,
and tumor matasis. Similarly, polypeptides and antibodies directed to these
polypeptides are useful in providing immunological probes for differential identification
35 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells,
particularly of the fetal lung, liver, endothelial cells, and immune tissues, expression of
this gene at significantly higher or lower levels may be routinely detected in certain

tissues and cell types (e.g., lung, endothelial cells, liver, thymus, and other tissue of the immune system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis of immune disorders and pulmonary and hepatic diseases. Its promoter may also be used for immune system and lung-specific gene therapies. The expression of this gene in endothelial cells indicates that it may also involve in angiogenesis which therefore may play role in tumor matasis.

FEATURES OF PROTEIN ENCODED BY GENE NO: 42

This gene is expressed primarily in liver, thyroid, parathyroid and to a lesser extent in fetal lung, stomach and early embryos.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: metabolic regulation, obesity, hepatic failure, hepatocellular tumors or thyroiditis and thyroid tumors. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the digestive/endocrine system expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, thyroid, parathyroid, lung, stomach, and embryonic tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and the extracellular locations indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection and treatment of digestive/endocrine disorders, including metabolic regulation, hepatic failure, malabsorption, gastritis and neoplasms.

FEATURES OF PROTEIN ENCODED BY GENE NO: 43

This gene is expressed primarily in Schizophrenic adult brain, pituitary, front cortex, hypothalamus and to a lesser extent in retina, adipose and stomach cancer and placenta.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: schizophrenia and other neurological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification
10 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nerve system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., retinal tissue, adipose, stomach, and placenta, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or
15 cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful in treatment/detection of disorders in the nerve
20 system, including schizophrenia, neurodegeneration, and neoplasia. Additionally, a secreted protein in brain may serve as an endocrine.

FEATURES OF PROTEIN ENCODED BY GENE NO: 44

The translation product of this gene shares sequence homology with GTP
25 binding proteins which are thought to be important in signal transduction and protein transport.

This gene is expressed primarily in umbilical vein and microvascular endothelial cells, GM-CSF treated macrophage, anergic T cells, osteoblast, osteoclast, CD34+ cells and to a lesser extent in gall bladder.

30 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: bone formation and growth, osteonecrosis, osteoporosis, angiogenesis and/or hematopoiesis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing
35 immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the skeletal and hematopoiesis systems, expression of this gene at significantly higher or lower levels

may be routinely detected in certain tissues and cell types (e.g., endothelial cells, blood cells, bone, and gall bladder, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene
5 expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to GTP binding proteins indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment/detection of bone formation and growth, osteonecrosis, osteoporosis, and/or
10 hematopoiesis because its involvement in the growth signaling or angiogenesis.

FEATURES OF PROTEIN ENCODED BY GENE NO: 45

The translation product of this gene shares sequence homology with signal sequence receptor gamma subunit which is thought to be important in protein
15 translocation on endoplasmic reticulum.

This gene is expressed primarily in adrenal gland, salivary gland, prostate, and to a lesser extent in endothelial cells and smooth muscle.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
20 biological sample and for diagnosis of diseases and conditions: protein secretion. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the secretory organs, expression of this gene at significantly higher or lower levels may be
25 routinely detected in certain tissues and cell types (e.g., adrenal gland, salivary gland, prostate, endothelial cells, and smooth muscle, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily
30 fluid from an individual not having the disorder.

The tissue distribution and homology to SSR gamma subunit indicate that polynucleotides and polypeptides corresponding to this gene are useful for endocrine disorders, prostate cancer, xerostomia or sialorrhea.

35 FEATURES OF PROTEIN ENCODED BY GENE NO: 46

This gene is expressed primarily in osteoclastoma cells and to a lesser extent in melanocyte, amygdala, brain, and stomach.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: ossification, osteoporosis, fracture, osteonecrosis, osteosarcoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the skeletal systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., melanocytes, amygdala, brain and other tissue of the nervous system, and stomach, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.
- The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful in intervention of ossification, osteoporosis, fracture, osteonecrosis and osteosarcoma.

FEATURES OF PROTEIN ENCODED BY GENE NO: 48

- The translation product of this gene shares sequence homology with proline rich proteins which is thought to be important in protein-protein interaction.
- This gene is expressed primarily in brain.
- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neurological and psychological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nerve system and endocrine system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.
- The tissue distribution and homology to proline-rich proteins indicate that polynucleotides and polypeptides corresponding to this gene are useful in intervention

and detection of neurological diseases, including trauma, neoplasia, degenerative or metabolic conditions in the central nerve system. Additionally, the gene product may be a secreted by the brain as an endocrine.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 49

The translation product of this gene shares sequence homology with the AOCB gene from *Aspergillus nidulans* which is important in asexual development.

This gene is expressed primarily in infant brain and to a lesser extent in the developing embryo, trachea tumors, B-cell lymphoma and synovial sarcoma.

10 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neurodegenerative diseases, leukemia and sarcoma's. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential
15 identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain and immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., embryonic tissue, blood cells, trachea, and synovial tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or
20 spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in infant brain and sarcoma's and homology to a gene involved in a key step of eukaryotic development (fungal spore formation) indicates
25 that the protein product of this clone could play a role in neurological diseases such as schizophrenia, particularly in infants. The existence of the gene in a B-cell lymphoma indicates the gene may be used in the treatment and detection of leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 50

30 This gene is expressed primarily in fetal lung.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: pulmonary disorders including lung cancer. Similarly, polypeptides and antibodies directed to these
35 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the pulmonary system, expression of this gene at significantly higher or

lower levels may be routinely detected in certain tissues and cell types (e.g., lung, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution of this gene only in fetal lung indicates that it plays a key role in development of the pulmonary system. This would suggest that misregulation of the expression of this protein product in the adult could lead to lymphoma or sarcoma formation, particularly in the lung. It may also be involved in predisposition to certain pulmonary defects such as pulmonary edema and embolism, bronchitis and cystic fibrosis.

FEATURES OF PROTEIN ENCODED BY GENE NO: 51

This gene is expressed primarily in hematopoietic cell types and fetal cells and to a lesser extent in all tissue types.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: defects in the immune system and hematopoiesis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and hematopoietic systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., hematopoietic cells, and fetal tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution of this gene predominantly in hematopoietic cells and in the developing embryo indicates that polynucleotides and polypeptides corresponding to this gene are useful for detection and treatment of lymphomas and disease states affecting the immune system or hematopoiesis disorders such as leukemia, AIDS, arthritis and asthma..

FEATURES OF PROTEIN ENCODED BY GENE NO: 52

This gene is expressed primarily in prostate and to a lesser extent in fetal spleen, fetal liver, infant brain and T cell leukemias.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: prostate disorders, prostate cancer, leukemia. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, and/or prostate gland expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., thymus, spleen, liver, brain and other tissue of the nervous system, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution of this gene in prostate indicates that polynucleotides and polypeptides corresponding to this gene are useful for detection or treatment of prostate disorders or prostate cancer. Its distribution in fetal liver and fetal spleen indicates it may play a role in the immune system and its misregulation could lead to immune disorders such as leukemia, arthritis and asthma.

20

FEATURES OF PROTEIN ENCODED BY GENE NO: 53

The translation product of this gene shares sequence homology with dynein.

This gene is expressed primarily in brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neuro-degenerative diseases of the brain. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly neuro-degenerative diseases expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The predominant tissue distribution in the brain and homology to dynein, a microtubule motor protein involved in the positioning of cellular organelles and molecules indicates that polynucleotides and polypeptides corresponding to this gene are useful for detection/treatment of neurodegenerative diseases, such as Alzheimers, 5 Huntingtons, Parkinsons diseases and shizophrenia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 54

The translation product of this gene shares sequence homology with ubiquitin-conjugation protein, an enzyme which is thought to be important in the processing of 10 the Huntingtons Disease causing gene.

This gene is expressed primarily in brain and to a lesser extent in activated macrophages.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a 15 biological sample and for diagnosis of diseases and conditions: neurodegenerative disease states including Huntington's disease. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of brain tissues. For a number of disorders of the above tissues or cells, particularly of the neurological systems expression of this gene at 20 significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level 25 in healthy tissue or bodily fluid from an individual not having the disorder.

The predominant tissue distribution of this gene in the brain and its homology to a Huntington interacting protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for the regulation of the expression of the Huntington disease gene and other neurodegenerative diseases including 30 spinocerebellar ataxia types I and III, dentatorubropallidoluysian and spinal bulbar muscular atrophy. In addition, the existence of elevated levels of free ubiquitin pools in Alzheimer's disease, Parkinson's disease and amyotrophic lateral sclerosis indicates that the ubiquitin pathway of protein degradation plays a role in these disease states. Thus, considering the gene described here is homologous to a ubiquitin-conjugation 35 protein it may play a general role in neurodegenerative conditions.

FEATURES OF PROTEIN ENCODED BY GENE NO: 56

This gene is expressed primarily in T-cells (anergic T-cells, resting T-Cells, apoptotic T-cells) and lymph node (breast), as well as brain (hypothalamus, hippocampus, pituitary, infant brain, early-stage brain).

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: immune (e.g. immunodeficiencies, autoimmunities, inflammation, leukemias & lymphomas) and neurological (e.g. Alzheimer's disease, dementia, schizophrenia) disorders. Similarly,
10 polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous, hematopoietic and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood
15 cells, lymphoid tissue, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

20 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful in the intervention or detection of pathologies associated with the hematopoietic and immune systems, such as anemias (leukemias). In addition, the expression in brain (including fetal) might suggest a role in developmental brain defects, neuro-degenerative diseases or behavioral abnormalities
25 (e.g. schizophrenia, Alzheimer's, dementia, depression, etc.).

FEATURES OF PROTEIN ENCODED BY GENE NO: 57

This gene is expressed primarily in lung, and to a lesser extent in a variety of other hematological cell types (e.g. Raji cells, bone marrow cell line, activated
30 monocytes).

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: pulmonary and/or hematological disfunction. Similarly, polypeptides and antibodies directed to these
35 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the vasculo-pulmonary and hematopoietic systems, expression of this

gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., lung and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the
5 standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful in the intervention and detection of pathologies associated with the vasculo-pulmonary system. In addition the expression of this gene
10 in a variety of leukocytic cell types and a bone marrow cell line might suggest a role in hematopoietic and immune system disorders, such as leukemias & lymphomas, inflammation, immunodeficiencies and autoimmunities.

FEATURES OF PROTEIN ENCODED BY GENE NO: 58

15 The translation product of this gene shares sequence homology with adenylate kinase isozyme 3 (gil163528 GTP:AMP phosphotransferase (EC 2.7.4.10) [Bos taurus]), which is thought to be important in catalyzing the phosphorylation of AMP to ADP in the presence of ATP or inorganic triphosphate.

This gene is expressed primarily in fetal liver, heart and placenta, and to a lesser
20 extent in many other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: hepatic, cardiovascular or reproductive disorders. Similarly, polypeptides and antibodies directed to these
25 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hepatic, cardiovascular and reproductive systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, heart, and placenta, and cancerous and wounded tissues) or
30 bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
35 corresponding to this gene are useful for the treatment and diagnosis of conditions related to hepatic function and pathogenesis, in particular, those dealing with liver development and the differentiation of hepatocyte progenitor cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 59

This gene is expressed primarily in CD34 positive cells (Cord Blood).

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: hematopoietic
differentiation and immune disorders. Similarly, polypeptides and antibodies directed to
these polypeptides are useful in providing immunological probes for differential
identification of the tissue(s) or cell type(s). For a number of disorders of the above
10 tissues or cells, particularly of hematopoietic and immune systems, expression of this
gene at significantly higher or lower levels may be routinely detected in certain tissues
and cell types (e.g., hematopoietic cells, and blood cells, and cancerous and wounded
tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
another tissue or cell sample taken from an individual having such a disorder, relative to
15 the standard gene expression level, i.e., the expression level in healthy tissue or bodily
fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful in the detection and treatment of conditions
associated with CD34-positive cells, and therefore as a marker for cell differentiation in
20 hematopoiesis, as well as immunological disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 60

The translation product of the predicted open reading frame of this contig has
sequence identity to the murine gene designated Insulin-Like Growth Factor-Binding
25 Protein (IGFBP)-1 as described by Lee and colleagues (Hepatology 19 (3), 656-665
(1994)).

This gene is expressed exclusively in hemangiopericytoma.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
30 biological sample and for diagnosis of hemangiopericytoma and other pericyte or
endothelial cell proliferative disorders. Similarly, polypeptides and antibodies directed
to these polypeptides are useful in providing immunological probes for differential
identification of the tissue(s) or cell type(s). For a number of disorders of the above
tissues or cells, particularly of the circulatory and immune systems, expression of this
35 gene at significantly higher or lower levels may routinely be detected in certain tissues
and cell types (e.g., pericyte or endothelial cells, and liver, and cancerous and wounded
tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or

another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

Polynucleotides and polypeptides corresponding to this gene are useful as cell
5 growth regulators since IGFBP-1-like molecules function as modulators of insulin-like growth factor activity. In addition, since IGFBP-1 is expressed at high levels following hepatectomy and during fetal liver development, polynucleotides of the present invention may also be used for the diagnosis of developmental disorders. Further, polypeptides of the present invention may be used therapeutically to treat
10 developmental liver disorders as well as to regulate hepatocyte and supporting cell growth following hepatectomy or to treat liver disorders.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of hemangiopericytoma and liver disorders.

15

FEATURES OF PROTEIN ENCODED BY GENE NO: 61

This gene is expressed primarily in schizophrenic frontal cortex.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
20 biological sample and for diagnosis of diseases and conditions: nervous system and cognitive disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the frontal cortex and CNS expression of this gene at significantly higher
25 or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
30 individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study, treatment and diagnosis of frontal cortex, neuro-degenerative and CNS disorders

35 FEATURES OF PROTEIN ENCODED BY GENE NO: 62

This gene is expressed primarily in human adrenal gland tumor, and to a lesser extent in human kidney, medulla and adult pulmonary tissue.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: metabolic, endocrine disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the endocrine and nervous system disorders and neoplasia, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., adrenal gland, kidney, brain and other tissue of the nervous system, pulmonary tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.
- The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study, treatment and diagnosis of neurological and endocrine disorders including neoplasia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 63

- This gene is expressed primarily in human adipocytes, and to a lesser extent in spleen, 12-week old human, and testes.
- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: immune, metabolic and growth disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., adipocytes, spleen, and testes and other reproductive tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.
- The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study, diagnosis and treatment of immune, developmental and metabolic disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 64

One translated product of this clone is homologous to the mouse zinc finger protein PZF. (See Accession No. 453376; see also Gene 152 (2), 233-238 (1995).) Preferred polypeptide fragments correspond to the highly conserved domains shared between mouse and man. For example, preferred polypeptide fragments comprise the amino acid sequence: LQCEICGFTCRQKASLNWHMKKHDADSFYQFSCNICGKKFEKKDSVVAHKAKSH PEV (SEQ ID NO: 621); ITSTDILGTNPESLTQPSD (SEQ ID NO: 622); NSTSGECLLLEAEGM SKSY (SEQ ID NO: 623); CSGTERVSLMADGKIFVGS GSSGGTEGLVMNSDILGATTEVLIEDSD SAGP (SEQ ID NO: 624); IQYVRCEMEGCGTVLAHPRYLQHIIKYQHLLKKKYVCPHPSCGRFL RLQKQLLRHAKHHT (SEQ ID NO: 625); DQRDYICEYCARAFKSSHNLA VHRMIHTGEK (SEQ ID NO: 626); RSSRTSVSRHRDTENTRSSRSKTGSLQLICKSEPNTDQLDY (SEQ ID NO: 627); PFKDDPRDETYKPHLERETPKPRRKS G (SEQ ID NO: 630); QYVRCEMEGCGTVLAHPRYLQ HHIKYQHLLKKKYVCPHPSCGRFLRLQKQLLRHAKHHTD (SEQ ID NO: 629); or residues 151-182 of QRDYICEYCARAFKSSHNLA VHRMIHTGEKHY (SEQ ID NO: 628). Also preferred are polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed primarily in Rhabdomyosarcoma, melanocyte and colon cancer tissue and to a lesser extent in smooth muscle, pancreatic tumor, and apoptotic T-cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to,. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and hemopoetic, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., striated muscle, melanocytes, colon, smooth muscle, pancreas, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study, diagnosis and treatment of cancer and hemopoetic disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 65

This gene is expressed primarily in human adipose and salivary gland tissue and to a lesser extent in human bone marrow and fetal kidney.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: metabolic and immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the metabolic and hemopoetic systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., adipose, salivary gland, bone marrow, and kidney, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study, diagnosis of metabolic and immune disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 66

This translated product of this gene was recently identified as oxytocinase splice variant 1. (See Accession Nos. 2209276 and d1010078.) Preferred polypeptide fragments comprise the amino acid sequence: EMFDSLSYFKGSSLLMLKTYLSEDFVQHAAVLYLHN HSYASIQSDDLWDSFNEVTNQTLDVKRMMKWTWLQKGFPLVTQKKGKELFIQERFFLNMK PEIQSDTRYM (SEQ ID NO: 631). Also preferred are polynucleotide fragments encoding this polypeptide fragment.

FEATURES OF PROTEIN ENCODED BY GENE NO: 67

This gene is expressed primarily in hemopoetic cells, particularly apoptotic T-cells, and to lesser extent in primary dendritic cells and adipose tissue.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of apoptotic T-cells, primary dendritic cells, and adipose tissue present in a biological sample and for diagnosis of diseases and conditions: hemopoetic diseases including cancer and general immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell

type(s). For a number of disorders of the above tissues or cells, particularly of the oral and intestinal mucosa as well as hemopoetic and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., hematopoietic cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of diseases of the immune system, including cancer, hemopoetic and infectious diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 68

This gene is expressed primarily in kidney cortex and to a lesser extent in infant brain, heart, uterus, and blood.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of kidney tissue present in a biological sample and for diagnosis of diseases and conditions: soft tissue cancer, inflammation, kidney fibrosis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous and endocrines systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., kidney, brain, and other nervous tissue, heart, uterus, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study and treatment of cancer and fibroses.

FEATURES OF PROTEIN ENCODED BY GENE NO: 69

The translation product of this gene shares strong sequence homology with vertebrate and invertebrate protein tyrosine phosphatases.

This gene is expressed primarily in endometrial tumors, melanocytes, myeloid progenitors and to a lesser extent in infant brain, adipocytes, and several hematopoietic stem cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of transformed hematopoietic and epithelial cells present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, of skin and endometrium, leukemia. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous and hemopoietic systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., endometrium, melanocytes, bone marrow, adipocytes, hematopoietic cells, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and sequence similarity with tyrosine phosphatases indicate that polynucleotides and polypeptides corresponding to this gene are useful for study and treatment of cancer and hematopoietic disorders.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 70

This gene is expressed primarily in osteoclastoma, breast, and infant brain and to a lesser extent in various fetal and transformed bone, ovarian, and neuronal cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: degenerative conditions of the brain and skeleton. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous and skeletal system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., bone, mammary tissue, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study and treatment of degenerative, neurological and skeletal disorders.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 71

This gene was originally cloned from tumor cell lines. Recently another group has also cloned this gene, calling it the human malignant melanoma metastasis-suppressor (KiSS-1) gene. (See Accession No. U43527.) Preferred polypeptide fragments comprise the amino acid sequence: LEKVASVGNSRPTGQQLESGLLA (SEQ ID NO: 632); VHREEASCYCQAEPGDL (SEQ ID NO: 633); RPALRQAGGGTREPRQKRWAGL (SEQ ID NO: 634); and AVNFRPQRSQSM (SEQ ID NO: 635). Any frame shifts can easily be resolved using known molecular biology techniques.

This gene is expressed primarily in many types of carcinomas and to a lesser extent in many normal organs.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissues(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer particularly melanomas, and other hyperproliferative disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of transformed organ tissue, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. As a tumor suppressor gene, increase amounts of the polypeptide can be used to treat patients having a particular cancer.

The tissue distribution indicates that this gene and the translated product is useful for diagnosing and study of cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 72

This gene is expressed primarily in striatum and to a lesser extent in adipocytes and hemangiopericytoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of striatal cells present in a biological sample and for diagnosis of diseases and conditions: neurological, fat and lysosomal storage

diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous and immune systems, expression of this gene at significantly higher or
5 lower levels may be routinely detected in certain tissues and cell types (e.g., striatal tissue, adipocytes, and vascular tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
10 individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis, study and treatment of neurodegenerative and growth disorders.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 73**

This gene is expressed primarily in bone marrow stromal cells and to a lesser extent in smooth muscle, testes, endothelium, and brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of bone marrow present in a biological sample and
20 for diagnosis of diseases and conditions: connective tissue and hematopoietic diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the skeletal and hematopoietic systems, expression of this gene at significantly higher or
25 lower levels may be routinely detected in certain tissues and cell types (e.g., bone marrow, stromal cells, smooth muscle, testes and other reproductive tissue, endothelium, brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to
30 the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study, diagnosis, and treatment of connective tissue and blood diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 74

This gene is expressed primarily in brain, fetal liver and lung and to a lesser extent in retina, spinal chord, activated T-cells and endothelial cells.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of brain and regenerating liver present in a biological sample and for diagnosis of diseases and conditions: CNS and spinal chord injuries, immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells,
10 particularly of the nervous and immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, liver, pulmonary tissue, blood cells, and endothelial cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from
15 an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study and treatment of hematopoietic and
20 neurological conditions.

FEATURES OF PROTEIN ENCODED BY GENE NO: 75

The translation product of this gene shares sequence homology with GTP binding proteins (intracellular).

25 This gene is expressed primarily in bone marrow, brain, and melanocytes and to a lesser extent in various endocrine and hematopoietic tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: hematopoietic and
30 nervous system conditions. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous and immune, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., bone
35 marrow, melanocytes, brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder,

relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to nucleotide binding factors indicate that polynucleotides and polypeptides corresponding to this gene are useful for study,
5 diagnosis, and treatment of brain degenerative, skin and blood diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 76

This gene is expressed primarily in activated T-cells and to a lesser extent in retina, brain, and fetal bone.

10 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of activated T-cells and developing brain present in a biological sample and for diagnosis of diseases and conditions: immune deficiencies and skeletal and neuronal growth disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes
15 for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous, immune, and skeletomuscular systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, brain and other tissue of the nervous system, retinal tissue, and bone, and cancerous and wounded tissues) or
20 bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
25 corresponding to this gene are useful for diagnosis, study and treatment of cancer, urogenital, and brain degenerative diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 77

This gene is expressed primarily in fetal liver, activated monocytes, osteoblasts
30 and to a lesser extent in synovial, brain, and lymphoid tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of myeloid and lymphoid present in a biological sample and for diagnosis of diseases and conditions: inflammation, immune deficiencies, cancer. Similarly, polypeptides and antibodies directed to these
35 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system and skeleton, expression of this gene at significantly

higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, blood cells, bone, synovial tissue, brain and other tissue of the nervous system, and lymphoid tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample
5 taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for study, diagnosis, and treatment of lymphoid
10 and mesenchymal cancers and nervous system diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 78

The translation product of this gene shares sequence homology with polymerase polyprotein precursor which is thought to be important in DNA repair and replication

15 This gene is expressed primarily in infant brain and to a lesser extent in tumors and tumor cell lines

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are
20 not limited to, especially of the neural system and developing organs. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neural system expression of this gene at significantly higher or lower levels may be routinely detected
25 in certain (e.g., brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

30 The tissue distribution and homology to polymerase polyprotein precursor indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of cancers especially of the neural system and developing organs

35 FEATURES OF PROTEIN ENCODED BY GENE NO: 79

This gene is expressed primarily in muscle and endothelial cells and to a lesser extent in brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: vascular diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the vascular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain (e.g., muscle, endothelial cells, brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of disorders of the vascular and neural system including cardiovascular and endothelial.

FEATURES OF PROTEIN ENCODED BY GENE NO: 80

This gene is expressed primarily in placenta and to a lesser extent in fetal liver. Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: developmental disorders and disorder of the haemopoietic system, fetal liver and placenta. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of developmental disorders and disorder of the haemopoietic system, fetal liver and placenta, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., placenta and liver, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of developmental disorders and disorders of the haemopoietic system, fetal liver and placenta.

FEATURES OF PROTEIN ENCODED BY GENE NO: 81

This gene is expressed primarily in bone marrow, placenta and tissues and organs of the hematopoietic system.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: disorders of the bone and haemopoietic system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification
10 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune, bone and hematopoietic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., bone marrow, placenta, and hematopoietic cells, and cancerous and
15 fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of disorders of the
20 immune, bone and hematopoietic system

FEATURES OF PROTEIN ENCODED BY GENE NO: 82

 The translation product of this gene shares sequence homology with secretory carrier membrane protein which is thought to be important in protein transport and
25 export. Any frame shifts in coding sequence can be easily resolved using standard molecular biology techniques. Another group recently cloned this gene, calling it SCAMP. (See Accession No. 2232243.)

 This gene is expressed primarily in prostate, breast and spleen, and to a lesser extent in several other tissues and organs.

30 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: disorders of the breast prostate and spleen. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification
35 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly disorders of the breast prostate and spleen, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell

types (e.g., prostate, mammary tissue, and spleen, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to secretory carrier membrane protein indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of disorders of the breast, prostate and spleen.

10 **FEATURES OF PROTEIN ENCODED BY GENE NO: 83**

This gene is expressed primarily in developing organs and tissue like placenta and infant brain and to a lesser extent in developed organs and tissue like cerebellum and heart.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neurological diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neural system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., placenta, heart, brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of diseases of the neural system including neurological disorders and cancer.

30 **FEATURES OF PROTEIN ENCODED BY GENE NO: 84**

The translation product of this gene shares sequence homology with ATPase 6 in *Trypanosoma brucei* which is thought to be important in metabolism.

This gene is expressed primarily in tumor and fetal tissues and to a lesser extent in melanocytes, kidney cortex, monocytes and ovary.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a

biological sample and for diagnosis of diseases and conditions: metabolism disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the fetal systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., fetal tissues, melanocytes, kidney, blood cells, ovary and other tissue of the reproductive system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to ATPase indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of metabolism disorders, especially in fetal and tumor tissue growth.

15

FEATURES OF PROTEIN ENCODED BY GENE NO: 85

The translation product of this gene shares sequence homology with the immunoglobulin superfamily of proteins which are known to be important in immune response and immunity.

20 This gene is expressed primarily in stromal cells, colon cancer, lung, amygdala, melanocyte and to a lesser extent in a variety of other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: defects of stromal cell development and cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the stromal cells, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., stromal cells, colon, lung, amygdala, and melanocytes, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

35 The tissue distribution and homology to immunoglobulin indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of immune system disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 86

The translation product of this gene shares sequence homology with transcription initiation factor eIF-4 gamma which is thought to be important in gene transcription.

This gene is expressed primarily in tumor tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumorigenesis.

Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly in tumor tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., endometrium and lung, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to transcription initiation factor eIF-4 gamma indicate that polynucleotides and polypeptides corresponding to this gene are useful for gene regulation in tumorigenesis.

FEATURES OF PROTEIN ENCODED BY GENE NO: 87

The translation product of this gene shares sequence homology at low level in prolines with secreted basic proline-rich peptide II-2 which is thought to be important in protein structure or inhibiting hydroxyapatite formation in vitro.

This gene is expressed primarily in endometrial tumor and fetal lung.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: endometrial tumors. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the muscular/skeletal and reproductive systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., endometrium, and lung, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample

taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- The tissue distribution and homology to secreted basic proline-rich peptide II-2
5 indicate that polynucleotides and polypeptides corresponding to this gene are useful for inhibiting hydroxyapatite formation or establishing cell/tissue structure.

FEATURES OF PROTEIN ENCODED BY GENE NO: 88

- This gene is expressed primarily in: amniotic cells induced with TNF in culture;
10 and to a lesser extent in colon tissue from a patient with Crohn's Disease; parathyroid tumor; activated T-cells; cells of the human Caco-2 cell line; adenocarcinoma; colon; corpus colosum; fetal kidney; pancreas tumor; fetal brain; early stage brain, and anergic T-cells.

- Therefore, polynucleotides and polypeptides of the invention are useful as
15 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumors. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system;
20 e.g., tumors, expression of this gene at significantly higher or lower levels may be routinely detected in certain (e.g., amniotic cells, colon, kidney, pancreas, parathyroid, brain and other tissue of the nervous system, blood cells, hematopoietic cells, liver, spleen, bone, testes and other reproductive tissue, brain and other tissue of the nervous system, and epithelial cells, and cancerous and wounded tissues) or bodily fluids (e.g.,
25 serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- The tissue distribution indicates that the protein product of this clone is useful
30 for modulating tumorigenesis and other immune system conditions such as disorders in immune response.

FEATURES OF PROTEIN ENCODED BY GENE NO: 89

- This gene is expressed primarily in fetal liver/spleen and hematopoietic cells and
35 to a lesser extent in brain, osteosarcoma, and testis tumor.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a

biological sample and for diagnosis of diseases and conditions: leukemia and hematopoietic disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hematopoietic and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., hematopoietic cells, liver, spleen, bone, testes, and other reproductive tissue, brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of hematopoietic and immune disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 90

The translation product of this gene shares weak sequence homology with mouse Gcap1 protein which is developmentally regulated in brain.

This gene is expressed primarily in infant and adult brain and fetal liver/spleen and to a lesser extent in smooth muscle, T cells, and a variety of other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neurological or hematopoietic disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous, hematopoietic, immune, and endocrine systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, blood cells, liver, spleen, and smooth muscle, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and its homology to Gcap1 protein indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of disorders in neuronal, hematopoietic, immune, and endocrine systems.

5 **FEATURES OF PROTEIN ENCODED BY GENE NO: 91**

This gene is expressed primarily in brain and hematopoietic cells and to a lesser extent in tumor tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
10 biological sample and for diagnosis of diseases and conditions: disorder in nervous, hematopoietic, immune systems and tumorigenesis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the in nervous, hematopoietic, immune
15 systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,
20 the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this clone is useful for diagnosis and treatment of disorders in the nervous, hematopoietic, and immune
25 systems.

25 **FEATURES OF PROTEIN ENCODED BY GENE NO: 92**

The translation product of this gene shares sequence homology with neuroendocrine-specific protein A which is thought to be important in neurologic systems.

30 This gene is expressed primarily in brain tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neural disorders and degeneration disease. Similarly, polypeptides and antibodies directed to these
35 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central or peripheral nervous systems, expression of this gene at

significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., hematopoietic cells, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having
5 such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to neuroendocrine-specific protein A indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment or diagnosis of neural disorders and degeneration disease.

10

FEATURES OF PROTEIN ENCODED BY GENE NO: 93

The translation product of this gene shares sequence homology with collagen-like protein and prolin-rich protein which are thought to be important in connective tissue function and tissue structure.

15 This gene is expressed primarily in fetal liver/spleen and brain tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neuronal or hematopoietic disorders. Similarly, polypeptides and antibodies directed to these
20 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous and hematopoietic systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, spleen, and brain and other tissue of the nervous system, and
25 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

30 The tissue distribution and homology to collagen-like protein and proline-rich proteins indicate that polynucleotides and polypeptides corresponding to this gene are useful for supporting brain and hematopoietic tissue function and diagnosis and treatment of disorders in these functions.

FEATURES OF PROTEIN ENCODED BY GENE NO: 94

35 This gene is expressed primarily in embryonic tissues and tumor tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a

biological sample and for diagnosis of diseases and conditions which include, but are not limited to,. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system (e.g., tumors), expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., embryonic tissue and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of cancer.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 95**

This gene is expressed primarily in brain tumor, placenta, and melanoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: brain tumor or melanoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain or melanocytes, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, placenta, and melanocytes, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the translation product of this gene is useful in the diagnosis and treatment of brain tumors and melanoma.

FEATURES OF PROTEIN ENCODED BY GENE NO: 96

The translation product of this gene shares sequence homology with a yeast membrane protein, SUR4, which encodes for APA1 that acts on a glucose-signaling pathway that controls the expression of several genes that are transcriptionally regulated by glucose.

This gene is expressed primarily in fetal liver, and to a lesser extent in placenta and breast tissue.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: defects of fetal liver or defects of glucose-regulated ATPase activities in tissues. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the fetal immune/hematopoietic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, placenta, and mammary tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to yeast SUR4 membrane protein indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of defects of fetal liver or defects of glucose-regulated ATPase activities.

FEATURES OF PROTEIN ENCODED BY GENE NO: 97

This gene is expressed primarily in fetal liver, brain, and amniotic fluid.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: defects of the fetal immune system and adult brain. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the fetal immune system and adult brain, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., amniotic fluid, serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this clone is useful for detecting defects of the fetal immune and hematopoietic systems since fetal liver is

the predominant organ responsible for hematopoiesis in the fetus. In addition, the gene product of this gene is thought to be useful for detecting certain neurological defects of the brain.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 98

The translation product of this gene shares sequence homology with an yolk protein precursor, Vitellogenin which is thought to be important in binding lipids such as phosvitin.

This gene is expressed primarily in amniotic cells and fetal liver.

10 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: defects in amniotic cells, fetal liver development and the fetal immune system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes
15 for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the [insert system where a related disease state is likely, e.g., immune], expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., amniotic cells, and liver, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma,
20 urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to vitellogenin indicate that the protein
25 product of this clone is useful for treatment and diagnosis of defects in amniotic cells, fetal liver development and the fetal immune system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 99

This gene is expressed primarily in placenta, endometrial tumor, osteosarcoma
30 and stromal cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumor of the endometrium or bone, and osteosarcoma. Similarly, polypeptides and antibodies
35 directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the obstetric system (e.g. placenta,

endometrium) and the bones, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., placenta, endometrium, bone, and stromal cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of tumors and abnormalities of the endometrium, and the bones because of its abundance in the aforementioned tissues..

FEATURES OF PROTEIN ENCODED BY GENE NO: 100

This gene is expressed primarily in hepatocellular tumor.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: hepatocellular tumor. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the liver, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this clone is useful for diagnosis and treatment of hepatocellular cancer because of its abundant expression in this tissue.

FEATURES OF PROTEIN ENCODED BY GENE NO: 101

This gene is expressed primarily in Corpus Colosum, fetal lung and infant brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: defects of the Corpus Colosum or defects of the fetal lung. Similarly, polypeptides and antibodies directed to

these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the Corpus Colosum and brain in general, and fetal lung, expression of this gene at significantly higher or lower levels may be routinely detected

5 in certain tissues and cell types (e.g., lung, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the

10 disorder.

The tissue distribution indicates that the protein product of this clone is useful for diagnosis and treatment of defects of the Corpus Colosum and brain in general, and defects of fetal lung.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 102**

This gene is expressed primarily in T cells and stromal cells, and to a lesser extent in adrenal gland.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a

20 biological sample and for diagnosis of diseases and conditions: defects of T cell immunity and stromal cell development. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at

25 significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, stromal cells, and adrenal gland, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily

30 fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this clone is useful for diagnosis and treatment of defects of T cell immunity and stromal cell development because of its abundant expression in these tissues.

35 **FEATURES OF PROTEIN ENCODED BY GENE NO: 103**

This gene is expressed primarily in infant brain and placenta.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: defects of the brain and nervous system. Similarly, polypeptides and antibodies directed to these polypeptides
5 are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous system, especially brain, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and placenta, cancerous and
10 wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this clone is useful
15 for detecting defects of the brain, especially in young children.

FEATURES OF PROTEIN ENCODED BY GENE NO: 105

This gene is expressed primarily in human osteoclastoma and to a lesser extent in human pancreas tumor.

20 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer particularly osteoclastoma and pancreatic tumor. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing
25 immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly in transformed tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., bone and pancreas, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
30 another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this clone is useful for diagnosis and treatment of some types of tumors, particularly pancreatic cancer and
35 osteoclastoma.

FEATURES OF PROTEIN ENCODED BY GENE NO: 106

This gene is expressed primarily in fetal liver/spleen, and to a lesser extent in activated T-Cells.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: immune disorders.
Similarly, polypeptides and antibodies directed to these polypeptides are useful in
providing immunological probes for differential identification of the tissue(s) or cell
type(s). For a number of disorders of the above tissues or cells, particularly of the
10 immune system, expression of this gene at significantly higher or lower levels may be
routinely detected in certain tissues and cell types (e.g., liver, spleen, and blood cells,
and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine,
synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual
having such a disorder, relative to the standard gene expression level, i.e., the
15 expression level in healthy tissue or bodily fluid from an individual not having the
disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for diagnosis or treatment of immune disorders.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 107

This gene is expressed primarily in human embryo and to a lesser extent in
spleen and chronic lymphocytic leukemia.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
25 biological sample and for diagnosis of diseases and conditions: leukemia. Similarly,
polypeptides and antibodies directed to these polypeptides are useful in providing
immunological probes for differential identification of the tissue(s) or cell type(s). For a
number of disorders of the above tissues or cells, particularly of the immune or
hemopoietic systems, expression of this gene at significantly higher or lower levels may
30 be routinely detected in certain tissues and cell types (e.g., embryonic tissue, spleen,
and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum,
plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from
an individual having such a disorder, relative to the standard gene expression level, i.e.,
the expression level in healthy tissue or bodily fluid from an individual not having the
35 disorder.

The tissue distribution indicates that the protein product of this clone is useful
for the diagnosis and treatment of leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 108

This gene is expressed primarily in placenta, and to a lesser extent in early stage human brain and in lung.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: fetal developmental abnormalities. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s)
10 or cell type(s). For a number of disorders of the above tissues or cells, particularly in fetal and amniotic tissue, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., placenta, brain and other tissue of the nervous system, and lung, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another
15 tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this is useful for production of growth factor(s) associated with fetal development. Preferred
20 polypeptides comprise the full-length polypeptide shown in the sequence listing, truncated however, at the amino terminus and beginning with QTIE.

FEATURES OF PROTEIN ENCODED BY GENE NO: 109

This gene is expressed primarily in fetal spleen, and to a lesser extent in B-Cell
25 lymphoma and T-Cell lymphoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: lymphoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing
30 immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., spleen and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal
35 fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this clone is useful for the treatment and diagnosis of human lymphomas.

FEATURES OF PROTEIN ENCODED BY GENE NO: 110

5 The translation product of this gene shares sequence homology with sarcoma amplified sequence (SAS), a tetraspan receptor which is thought to be important in malignant fibrous histiocytoma and liposarcoma.

 This gene is expressed primarily in human osteoclastoma, and to a lesser extent in pineal gland and infant brain.

10 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: malignant fibrous histiocytoma and liposarcoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification
15 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., bone, pineal gland, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal
20 fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

 The tissue distribution and homology to sarcoma amplified sequence (SAS) indicate that the protein product of this clone is useful for treatment of, osteosarcoma,
25 malignant fibrous histiocytoma and liposarcoma and related cancers, particularly sarcomas.

FEATURES OF PROTEIN ENCODED BY GENE NO: 111

 The translation product of this gene shares sequence homology with 6.8K
30 proteolipid protein, mitochondrial - bovine.

 This gene is expressed primarily in Wilm's tumor and to a lesser extent in cerebellum and placenta.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
35 biological sample and for diagnosis of diseases and conditions: Wilm's tumor. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell

type(s). For a number of disorders of the above tissues or cells, particularly of the immune or renal systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and placenta, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to 6.8K proteolipid protein indicate that the protein product of this clone is useful for diagnostic and therapeutics associated with tumors, particularly Wilm's tumor disease.

FEATURES OF PROTEIN ENCODED BY GENE NO: 112

This gene is expressed primarily in embryonic tissue and to a lesser extent in osteoblasts, endothelial cells, macrophages (GM-CSF treated), and bone marrow.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., embryonic tissue, bone, endothelial cells, blood cells and bone marrow, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment or diagnosis of immune disorders. Preferred polypeptides encoded by this gene comprise the following amino acid sequence: MITDVQLAIFANMLGVSLFLLVLYHYVAVNNPKKQE (SEQ ID NO: 636).

FEATURES OF PROTEIN ENCODED BY GENE NO: 113

This gene is expressed primarily in hepatocellular tumor, and to a lesser extent in fetal liver/spleen.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumors, particularly hepatocellular tumors. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hepatic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, and spleen, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this clone is useful for diagnosis and treatment of tumors, particularly hepatocellular tumors.

FEATURES OF PROTEIN ENCODED BY GENE NO: 114

The translation product of this gene exhibits a very high degree of sequence identity with the human Pig8 gene which is thought to be important in p53 mediated apoptosis. The sequence of this gene has since been published by Polyak and colleagues (Nature 389, 300-306 (1997)). In addition, the predicted translation product of this contig exhibits very high sequence homology with a murine gene denoted as EI24 which is also thought to be important in p53 mediated apoptosis.

This gene is expressed primarily in infant brain and activated T-cells and to a lesser extent in bone marrow, fetal liver, and prostate.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, and tissue damage by radiation and anti-cancer drugs. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, blood cells, bone marrow, liver, and prostate, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder,

relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to human Pig8 and murine EI24 genes indicate that polynucleotides and polypeptides corresponding to this gene are useful for preventing apoptosis in patients being treated with anti-oncogenic drugs such as etoposide, hydroperoxycyclophosphamide, and X-irradiation, since this protein product is upregulated in cells undergoing such treatment where p53 was overexpressed. It may also be useful in the treatment of hematopoietic disorders and in boosting numbers of hematopoietic stem cells by interfering with the apoptosis of progenitor cells. The mature polypeptide is predicted to comprise the following amino acid sequence:

EEMADSVKTFQLQDLARGIKDSIWGICTISKLDARIQQKREEQRRRRASSVLAQRRRAQSIERKQES
 EPRIVSRIFQCCA WNGGVFWFSLLLFYRVFIPVLQSVTARIIGDPSLHGDVWSWLEFFLTSIFSA
 LWVLPFLVLSKVVNAIWFQDIADLAFEVSGRKPFPFSPVSKIIADMLFNLLLQALFLIQGMFVSL
 FPIHLVGQLVSLHMSLLYSLYCFEYRWFNKGIEMHQRLSNIERNWPYYFGFGLPLAFLTAMQ
 SSIYISGCLFSILFPLFIISANEAKTPGKAYLFQLRFLSVVFLSNRLFHKTVYLQSALSSSTSAEK
 FPSPHPSPAKLKATAGH (SEQ ID NO: 637). Accordingly, polypeptides comprising the foregoing amino acid sequence are provided as are polynucleotides encoded such polypeptides.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 115

This gene is expressed primarily in stromal cells and to a lesser extent in multiple sclerosis.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: affecting the nervous system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., stromal cells and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of multiple sclerosis and other autoimmune diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 116

This gene is expressed primarily in the gall bladder

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: gall stones or infection
of the digestive system. Similarly, polypeptides and antibodies directed to these
polypeptides are useful in providing immunological probes for differential identification
of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells,
10 particularly of the digestive system or renal system, expression of this gene at
significantly higher or lower levels may be routinely detected in certain tissues and cell
types (e.g., gall bladder and tissue of the digestive system, and cancerous and wounded
tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
another tissue or cell sample taken from an individual having such a disorder, relative to
15 the standard gene expression level, i.e., the expression level in healthy tissue or bodily
fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for possible prevention of digestive disorders
where there may be a lack of digestive enzymes produced or in the detection and
20 possible prevention of gall stones.

FEATURES OF PROTEIN ENCODED BY GENE NO: 117

The translation product of this gene shares sequence homology with dystrophin
gene which is thought to be important in building and maintenance of muscles.

25 This gene is expressed primarily in placenta and to a lesser extent in fetal brain
and fetal liver, and spleen.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: muscular dystrophy,
30 Duchenne and Becker's muscular dystrophies. Similarly, polypeptides and antibodies
directed to these polypeptides are useful in providing immunological probes for
differential identification of the tissue(s) or cell type(s). For a number of disorders of
the above tissues or cells, particularly of the skeletal muscle system, expression of this
gene at significantly higher or lower levels may be routinely detected in certain tissues
35 and cell types (e.g., placenta, brain and other tissue of the nervous system, muscle,
liver, and spleen, and cancerous and wounded tissues) or bodily fluids (e.g., serum,
plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from

an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

5 The tissue distribution and homology to the dystrophin gene indicate that polynucleotides and polypeptides corresponding to this gene are useful for diseases related the degenerative myopathies that are characterized by the weakness and atrophy of muscles without neural degradation; such as Duchenne and Becker's muscular dystrophies.

10 **FEATURES OF PROTEIN ENCODED BY GENE NO: 118**

This gene is expressed primarily in olfactory tissue and to a lesser extent in cartilage.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
15 biological sample and for diagnosis of diseases and conditions: connective tissue diseases; chondrosarcoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the connective tissue, expression of this gene at significantly higher or
20 lower levels may be routinely detected in certain tissues and cell types (e.g., olfactory tissue and cartilage, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the
25 disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for tumors of connective tissues, osteoarthritis and the treatment and diagnosis of chondrosarcoma.

30 **FEATURES OF PROTEIN ENCODED BY GENE NO: 119**

This gene is expressed primarily in Activated Neutrophils and to a lesser extent in fetal spleen, and CD34 positive cells from cord blood.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
35 biological sample and for diagnosis of diseases and conditions: allergies, defects in hematopoiesis and inflammation. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential

identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system and hematopoiesis system the, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and spleen, and cancerous and
5 wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
10 corresponding to this gene are useful for reducing the allergic effects felt by allergy suffers by neutralizing the activity of the immune system, especially since neutrophils are abundant in persons suffering from allergies and other inflammatory conditions.

FEATURES OF PROTEIN ENCODED BY GENE NO: 120

15 The translation product of this gene shares sequence homology with poly A binding protein II which is thought to be important in RNA binding for transcription of RNA to DNA

This gene is expressed primarily in colon and to a lesser extent in brain and immune system.

20 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: colon cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a
25 number of disorders of the above tissues or cells, particularly of the immune and digestive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., colon, tissue and cells of the immune system, and brain or other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal
30 fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to poly A binding protein II indicate that polynucleotides and polypeptides corresponding to this gene are useful for detection
35 and treatment of colon cancer and other disorders of the digestive system..

FEATURES OF PROTEIN ENCODED BY GENE NO: 121

The translation product of this gene shares sequence homology with thymidine diphosphoglucose 4.6 dehydrase which is thought to be important in the metabolism of sugar.

5 This gene is expressed primarily in fetal liver and spleen and to a lesser extent in infant brain.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: diabetes. Similarly,
10 polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the endocrine system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, spleen, and brain and other tissue of the
15 nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

20 The tissue distribution and homology to thymidine diphosphoglucose 4.6 dehydrase indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment of persons with diabetes since it appears that this protein is needed in the metabolism of sugar in to its more basic components.

25 FEATURES OF PROTEIN ENCODED BY GENE NO: 122

 The translation product of this gene shares sequence homology with ceruloplasmin which is thought to be important in the metabolism and transport of iron and copper. Ceruloplasmin also contains domains with homology to clotting factors V and VIII. Defects in the circulating levels of ceruloplasmin (aceruloplasminemia) have
30 been associated with certain disease conditions such as Wilson disease, and the accompanying hepatolenticular degeneration.

 This gene is expressed primarily in brain and retina and to a lesser extent in endothelial cells.

 Therefore, polynucleotides and polypeptides of the invention are useful as
35 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: diseases marked by defects in iron metabolism; aceruloplasminemia not characterized by defects in the

known ceruloplasmin gene locus; nonclassical Wilson disease; movement disorders; and tumors derived from a brain tissue origin. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain, retina, and nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, retinal tissue, and endothelial cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to ceruloplasmin indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment of patients with aceruloplasminemia, or other defects in iron and/or copper metabolism. Mutations in this locus could also be diagnostic for patients currently experiencing or predicted to experience aceruloplasminemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 123

This gene is expressed primarily in brain and B cell lymphoma and to a lesser extent in fetal liver and spleen.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: B cell lymphoma; tumors and diseases of the brain and/or spleen; hematopoietic defects. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain and hematopoietic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, blood cells, liver, and spleen, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of disorders in neuronal,

hematopoietic, and immune systems. It could potentially be useful for neurodegenerative disorders and neuronal and/or hematopoietic cell survival or proliferation.

5 **FEATURES OF PROTEIN ENCODED BY GENE NO: 124**

This gene is expressed primarily in osteoclastoma, dermatofibrosarcoma, and B cell lymphoma and to a lesser extent in endothelial cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
10 biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer in particular osteoclastoma, dermatofibrosarcoma, and B cell lymphoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of
15 the bone, immune, and circulatory system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., bone, epidermis, blood cells, and endothelial cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to
20 the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of cancers and lymphoma; osteoporosis; and the control of cell proliferation and/or differentiation.

25

FEATURES OF PROTEIN ENCODED BY GENE NO: 125

This gene is expressed primarily in immune tissues and hematopoietic cells, particularly in activated T cells and neutrophils, spleen, and fetal liver, and to a lesser extent in infant adrenal gland.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: defects in T cell activation; hematopoietic disorders; tumors of a hematopoietic and/or adrenal gland origin. Similarly, polypeptides and antibodies directed to these polypeptides are useful
30 in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hematopoietic and/or endocrine systems, expression of this gene at significantly higher
35

or lower levels may be routinely detected in certain tissues and cell types (e.g., cells and tissues of the immune system, hematopoietic cells, blood cells, liver, and adrenal gland, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual
5 having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for immune and/or hematopoietic disorders;
10 diseases related to proliferation and/or differentiation of hematopoietic cells; defects in T cell and neutrophil activation and responsiveness; and endocrine and/or metabolic disorders, particularly of early childhood.

FEATURES OF PROTEIN ENCODED BY GENE NO: 126

15 This gene is expressed primarily in placenta and endothelial cells and to a lesser extent in melanocytes and embryonic tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumors of an endothelial
20 cell origin; angiogenesis associated with tumor development and metastasis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the vascular system and developing embryo, expression of this gene at significantly higher or lower levels
25 may be routinely detected in certain tissues and cell types (e.g., placenta, endothelial cells, melanocytes, and embryonic tissues, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily
30 fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of developmental disorders; inhibition of angiogenesis; and vascular patterning.

35 FEATURES OF PROTEIN ENCODED BY GENE NO: 127

This gene is expressed primarily in endothelial cells and hematopoietic tissues, including spleen, tonsils, leukocytes, and both B- and T-cell lymphomas.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumors of an endothelial cell and/or hematopoietic origin; leukemias and lymphomas. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and vascular systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., endothelial cells, hematopoietic cells, spleen, tonsils, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the manipulation of angiogenesis; the differentiation and morphogenesis of endothelial cells; the proliferation and/or differentiation of hematopoietic cells; and the commitment of hematopoietic cells to distinct cell lineages.

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FEATURES OF PROTEIN ENCODED BY GENE NO: 128

This gene is expressed primarily in kidney medulla and to a lesser extent in spleen from chronic myelogenous leukemia patients, prostate cancer, and some other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumors of a kidney origin; chronic myelogenous leukemia; prostate cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the kidney and spleen, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., kidney, spleen, and prostate, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of kidney disorders and cancer, particularly chronic myelogenous leukemia and prostate cancer. It may also be useful for the enhancement of kidney tubule regeneration in the treatment of acute renal failure.

FEATURES OF PROTEIN ENCODED BY GENE NO: 129

This gene is expressed primarily in adult and infant brain and to a lesser extent in mesenchymal or fibroblast cells, as well as tissues with a mesenchymal origin.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumors of a brain and/or mesenchymal origin; neurodegenerative disorders; cancer; fibrosis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain and of mesenchymal cells and tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis of tumors of a brain and/or mesenchymal origin; neurodegenerative disorders; cancer; and fibrosis, based upon the expression of this gene within those tissues. Fibrosis is considered as mesenchymal cells and fibroblasts are the primary cellular targets involved in this pathological condition.

FEATURES OF PROTEIN ENCODED BY GENE NO: 130

This gene is expressed primarily in hepatocellular cancer and to a lesser extent in fetal tissues as well as testes tumor.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: liver cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing

immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the digestive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, fetal tissue, and testes and other

5 reproductive tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

10 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of liver cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 131

This gene is expressed only in infant early brain.

15 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: development and diseases of the nervous system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification
20 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain and nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another
25 tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating diseases of the brain in children and in
30 treating nervous system disorders such as Alzheimer's disease, schizophrenia, dementia, depression, etc.

FEATURES OF PROTEIN ENCODED BY GENE NO: 132

This gene is expressed primarily in brain and to a lesser extent in glioblastoma.

35 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: Alzheimer's disease,

schizophrenia, depression, mania, and dementia. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain and nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating brain disorders such as Alzheimer's disease, schizophrenia, depression, mania, and dementia.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 133**

The translation product of this gene shares sequence homology with ribitol dehydrogenase of bacteria which is thought to be important in metabolism of sugars.

This gene is expressed primarily in macrophage and to a lesser extent in T-cell lymphoma and lung.

20 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tissue destruction in inflammation. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells and lung, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

30 The tissue distribution and homology to ribitol dehydrogenase indicate that polynucleotides and polypeptides corresponding to this gene are useful for altering macrophage metabolism in diseases such as inflammation where macrophages are causing excess tissue destruction.

FEATURES OF PROTEIN ENCODED BY GENE NO: 134

This gene is expressed primarily in pancreatic tumor and to a lesser extent in synovial sarcoma.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to,. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of
10 the endocrine and connective tissue systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., pancreas, and synovial tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene
15 expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating and diagnosing various cancers.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 135

This gene is expressed primarily in T cell lines such as Raji and to a lesser extent in infant brain.

Therefore, polynucleotides and polypeptides of the invention are useful as
25 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: immune system disorders and inflammation. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or
30 lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily
35 fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating and diagnosing inflammatory diseases

such as rheumatoid arthritis, sepsis, inflammatory bowel disease, and psoriasis, as well as neutropenia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 136

5 The translation product of this gene shares high sequence homology with SAR1 subfamily of GTP-binding proteins which is thought to be important in vesicular transport in mammalian cells.

 This gene is expressed primarily in serum-stimulated smooth muscle cells and to a lesser extent in a T-cell lymphoma.

10 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: diseases affecting vesicular transport. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification
15 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the muscular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and smooth muscle, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample
20 taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

 The tissue distribution and homology to GTP-binding proteins indicate that polynucleotides and polypeptides corresponding to this gene are useful for gene therapy
25 in treating the large number of diseases involved in defective vesicular transport within cells..

FEATURES OF PROTEIN ENCODED BY GENE NO: 137

 The translation product of this gene shares sequence homology with a protein
30 found in *C. elegans* cosmid F25B5.

 This gene is expressed primarily in a fetal tissues and to a lesser extent in melanocytes.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
35 biological sample and for diagnosis of diseases and conditions: abnormal fetal development, especially of the pulmonary system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes

for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the fetal pulmonary system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., fetal tissue, pulmonary tissue, and melanocytes, and
5 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
10 corresponding to this gene are useful for treatment and diagnosis of diseases affecting the pulmonary system, such as emphysema.

FEATURES OF PROTEIN ENCODED BY GENE NO: 138

This gene is expressed primarily in gall bladder and to a lesser extent in smooth
15 muscle.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: digestive system disease and gall bladder problems. Similarly, polypeptides and antibodies directed to these
20 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the digestive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., gall bladder and tissue of the digestive system, and smooth muscle, and cancerous and
25 wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
30 corresponding to this gene are useful for treating diseases of the digestive system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 139

This gene is expressed primarily in placenta and to a lesser extent in brain.

Therefore, polynucleotides and polypeptides of the invention are useful as
35 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: abnormal fetal development. Similarly, polypeptides and antibodies directed to these polypeptides are

useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of developing tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., placenta, and brain and other
5 tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- 10 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating and diagnosing abnormal fetal development.

FEATURES OF PROTEIN ENCODED BY GENE NO: 140

- 15 This gene is expressed primarily in smooth muscle and to a lesser extent in ovary, prostate cancer, and activated monocytes.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: hypertension and
20 atherosclerosis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the circulatory system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., smooth
25 muscle, ovary and other reproductive tissue, prostate, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- 30 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating diseases of the circulatory system, such as hypertension, atherosclerosis, etc.

FEATURES OF PROTEIN ENCODED BY GENE NO: 141

- 35 This gene is expressed primarily in fetal spleen and to a lesser extent in placenta and bone marrow.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: anemia and other diseases affecting blood cells. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the circulatory and pulmonary systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., spleen, placenta, bone marrow, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the generation of red and white blood cells and for the diagnosis of disease of these cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 142

The predicted translation product of this contig is a human homolog of the murine tetracycline/sugar transporter molecule recently reported by Matsuo and colleagues (Biochem. Biophys. Res. Commun. 238 (1), 126-129 (1997)).

This gene is expressed primarily in synovium and to a lesser extent in endothelial cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: rheumatoid arthritis and inflammation. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and lymphatic systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., synovial tissue, and endothelial cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of inflammatory diseases, such as rheumatoid arthritis, leukemia, neutropenia, inflammatory bowel disease, psoriasis, sepsis, and the like.

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FEATURES OF PROTEIN ENCODED BY GENE NO: 143

This gene is expressed primarily in placenta and to a lesser extent in melanocyte, fetal liver and spleen, and bone marrow.

Therefore, polynucleotides and polypeptides of the invention are useful as
10 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: abnormal early development. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, lower levels
15 may be routinely detected in certain tissues and cell types (e.g., placenta, melanocytes, liver, spleen, and bone marrow, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
20 individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment and diagnosis of abnormal early development phenomena and diseases.

25 FEATURES OF PROTEIN ENCODED BY GENE NO: 144

This gene is expressed primarily in fetal liver and spleen.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: anemia and neutropenia.
30 Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and blood systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver and spleen,
35 and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the

expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful in hematopoiesis and bone marrow regeneration
5 as it is most abundant in fetal tissues responsible for the generation of hematopoietic cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 145

The translation product of this gene shares sequence homology with protein
10 tyrosine phosphatase which is thought to be important in transducing signal to activate cells such as T cell, B cell and other cell types.

This gene is expressed primarily in T cells and tissues in early stages of development and to a lesser extent in cancers.

Therefore, polynucleotides and polypeptides of the invention are useful as
15 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: immuno-related diseases and cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells,
20 particularly of the immune system expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., embryonic and fetal tissue, undifferentiated cells, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to
25 the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to the protein tyrosine phosphatase family indicate that polynucleotides and polypeptides corresponding to this gene are useful for modulating the immune system.

30

FEATURES OF PROTEIN ENCODED BY GENE NO: 146

This gene is expressed primarily in T cell and to a lesser extent in B cell, macrophages and tumor tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as
35 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: immuno-disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in

providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and cancerous and
5 wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
10 corresponding to this gene are useful for regulating the immune system therefore can be used in treating diseases such as autoimmune diseases and cancers.

FEATURES OF PROTEIN ENCODED BY GENE NO: 147

This gene is expressed primarily in placenta and to a lesser extent in endothelial
15 cells, testis tumor, ovarian cancer, uterine cancer.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to cancer. Similarly, polypeptides and antibodies directed to these
20 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., placenta, endothelial cells, testis and ovary and other reproductive tissue, and cancerous and
25 wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
30 corresponding to this gene are useful for diagnosis and treatment of cancers.

FEATURES OF PROTEIN ENCODED BY GENE NO: 148

This sequence has significant homology to mouse torsin A. Recently, another group cloned the human Torsin A gene. (See, Accession No. 2358279; see also Nature
35 Genet. 17, 40-48 (1997).)

This gene is expressed primarily in osteoclastoma, T-cell, and placenta and to a lesser extent in fetal lung, fetal liver, fetal brain, adult brain and tumor tissues

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: disease conditions in hematopoiesis and cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hematopoiesis system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, bone, placenta, lung, liver, and brain and other tissues of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating blood related diseases such as deficiencies in red blood cell, white blood cell, platelet and other hematopoiesis cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 149

This gene is expressed primarily in T cell, prostate and prostate cancer, endothelial cells and to a lesser extent in monocyte, dendritic cell, bone marrow, salivary gland, colon cancer, stomach cancer, pancreatic tumor, uterine cancer, fetal spleen and osteoclastoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: immuno-related diseases and cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, prostate, endothelial cells, dendritic cells, bone marrow, salivary gland, colon, stomach, pancreas, uterus, spleen and bone, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of cancers.

FEATURES OF PROTEIN ENCODED BY GENE NO: 150

- 5 This gene was recently cloned by another group, calling it eIF3-p66. (See Accession No. 2351378.) This gene plays a role in RNA binding and macromolecular assembly, and therefore, any mutations in this gene would likely result in a diseased phenotype. Preferred polypeptide fragments comprise the amino acid sequence:
- 10 MAKFMTPVIQDNPSGWGPCAVPEQFRDMPYQPFSGDRLGKVADWTGATYQDKRYTNKYSS
QFGGGSQYAYFHEEDESSFLVDTARTQKTAYQRNMRFAQRNLRRDKDRRNMLQFNLQILP
KSAKQKERERIRLQKKFQKQFGVRQKWDQKSQKPRDSSVEVRSDWEVKEEMDFPQLMKMRY
LEVSEPQDIECCGALEYDYKAFDRITRSEKPLRXXKRIFHTVTTTDDPVIRKLAKTQGNVFATD
AILATLMSCTRSVYSWDIVVQVRVGSKLFFDKRDNDFDLLTVSETANEPQDEGNSFNSPRNL
AMEATYINHNFSQQCLRMGKERYNFPNPNPFVEDDMDKNEIASVAYRYSRSGKLGDDIDLIVRC
15 EHDGVMTGANGEVSFINIKTLNEWDSRHCNGVDWRQKLDSQRGAVIATELKNNSYKLARWTC
CALLAGSEYLKLGYSRYHVKDSSRHVILGTQQFKPNEFASQINLSVENAWGILRCVIDICMKL
EEGKYLILKDPNKQVIRVYSLPDGTFSS (SEQ ID NO: 638), as well as N-terminal and C-terminal deletions of this polypeptide fragment.

- 20 This gene is expressed primarily in T cell, bone marrow, embryo and endothelial cells and to a lesser extent in testis tumor and endometrial tumor.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: immune diseases and tumors. Similarly, polypeptides and antibodies directed to these polypeptides are useful
- 25 in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system and reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
- 30 fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for immune disorders and cancers.

FEATURES OF PROTEIN ENCODED BY GENE NO: 151

This gene is expressed primarily in testis and to a lesser extent in T cell, spinal cord, placenta, neutrophil and monocyte.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: male reproductive and endocrine disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells,
10 particularly of the reproductive, immune and endocrine systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., testis and other reproductive tissue, blood cells, tissue of the nervous system, and placenta, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell
15 sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for regulating immune and reproductive functions.
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FEATURES OF PROTEIN ENCODED BY GENE NO: 152

The translation product of this gene shares sequence homology with tyrosyl-tRNA synthetase which is thought to be important in cell growth.

This gene is expressed primarily in brain, liver, keratinocytes, tonsils, and
25 heart.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer autoimmune diseases. Similarly, polypeptides and antibodies
30 directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain, liver, keratinocytes, tonsils, heart expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissues of the nervous system,
35 liver, keratinocytes, tonsils and heart, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard

gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to tyrosyl-tRNA synthetase indicate that polynucleotides and polypeptides corresponding to this gene are useful for modulating cell growth.

FEATURES OF PROTEIN ENCODED BY GENE NO: 153

This gene is homologous to the *Drosophila* transcriptional regulator dre4. (See Accession No. 2511745.) Dre4 is a gene required for steroidogenesis in *Drosophila melanogaster* and encodes a developmentally expressed homologue of the yeast transcriptional regulator CDC68. Preferred polypeptide fragments comprise the amino acid sequence: KKRHTDVQFYTEVGEITDGLGKHQMHDRDDLAEQMEREMRHKLKTAFTKN FIEKVEALTKEELEFEVPRDLGFNGAPYRSTCLLQPTSSALVNATEWPPFVVTLDEVELIHFXR VQFHLKNFDMVIVYKDYSKKVTMNAIPVASLDPIKEWLNSCDLKYTEGVQSLNWTKIMKTIVD DPEGFFEQGGWSFL (SEQ ID NO: 639), as well as N-terminal and C-terminal deletions of this fragments. Also preferred are polynucleotide fragments encoding this polypeptide fragment.

This gene is expressed primarily in fetal liver, spleen, placenta, lung, T cell, thyroid, testes.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: brain tumor, heart and liver diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the fetal liver, spleen, placenta, lung, T cell, thyroid, testes expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, spleen, placenta, lung, blood cells, thyroid, and testes and other reproductive tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

35 FEATURES OF PROTEIN ENCODED BY GENE NO: 154

This gene is expressed primarily in brain and to a lesser extent in fetal heart, testis, spleen, lung.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: heart, liver and spleen diseases, immunological diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain, fetal heart, testis, spleen, lung expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, heart, testes and other reproductive tissue, spleen, and lung, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

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FEATURES OF PROTEIN ENCODED BY GENE NO: 155

Activation of T cells through the T cell antigen receptor (TCR) results in the rapid tyrosine phosphorylation of a number of cellular proteins, one of the earliest being a 100 kDa protein. This gene is the human equivalent of murine valosin containing protein (VCP). VCP is a member of a family of ATP binding, homo-oligomeric proteins, and the mammalian homolog of *Saccharomyces cerevisiae* cdc48p, a protein essential to the completion of mitosis in yeast. Both endogenous and expressed murine VCP are tyrosine phosphorylated in response to T cell activation. Thus we have identified a novel component of the TCR mediated tyrosine kinase activation pathway that may provide a link between TCR activation and cell cycle control.

25

This gene is expressed primarily in brain, liver, spleen, placenta.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer immunological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain, liver, spleen, placenta expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, liver, spleen, and placenta, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from

35

an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

5 The tissue distribution and homology to VCR indicate that polynucleotides and polypeptides corresponding to this gene are useful for treating cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 156

The translation product of this gene shares sequence homology with rat growth response protein which is thought to be important in cell growth. A group recently
10 cloned the human homolog of this gene, calling it insulin induced protein 1. (See Accession No. 2358269, see also, Genomics 43 (3), 278-284 (1997).) Preferred polypeptide fragments comprise the amino acid sequence: RSGLGLGITIAFLATLITQF LVYNGVYQYTSPDFLYIRSWLPCIFFSGGVTVGNIGRQLAMGVPEKPHSD (SEQ ID NO: 640), as well as N-terminal and C-terminal deletions of this polypeptide fragment. Also
15 preferred are polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed primarily in brain, liver, placenta, heart, spleen, lymphoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
20 biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer immunological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain, liver, placenta, heart, spleen.
25 expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, liver, placenta, heart, spleen, and lymphoid tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the
30 standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to growth-response protein indicate that polynucleotides and polypeptides corresponding to this gene are useful for modulating cell growth.

FEATURES OF PROTEIN ENCODED BY GENE NO: 157

This gene is expressed primarily in Glioblastoma, endometrial tumor, lymphoma and pancreas tumor.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: Glioblastoma, Endometrial tumor, lymphoma and pancreas tumor. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders
10 of the above tissues or cells, particularly of the immune, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., endometrium, lymphoid tissue, pancreas, and tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual
15 having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

FEATURES OF PROTEIN ENCODED BY GENE NO: 158

20 The translation product of this gene shares sequence homology with IGE receptor which is thought to be important in allergy and asthma.

This gene is expressed primarily in T cell, and fetal liver.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
25 biological sample and for diagnosis of diseases and conditions: allergy and asthma and other immunological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune, expression of this gene at significantly higher or lower
30 levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and liver, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the
35 disorder.

The tissue distribution and homology to IgE receptor indicate that polynucleotides and polypeptides corresponding to this gene are useful for allergy and asthma.

5 **FEATURES OF PROTEIN ENCODED BY GENE NO: 159**

The translation product of this gene shares sequence homology with immunoglobulin heavy chain which is thought to be important in immune response to the antigen.

10 This gene is expressed primarily in activated neutrophil and to a lesser extent in activated T cell, monocyte and heart.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: infection, inflammation and cancer. Similarly, polypeptides and antibodies directed to these polypeptides are
15 useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, and heart, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
20 fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to immunoglobulin heavy chain variable region indicate that polynucleotides and polypeptides corresponding to this gene are
25 useful for making the ligand to block specific antigen which cause certain disease.

FEATURES OF PROTEIN ENCODED BY GENE NO: 160

The translation product of this gene shares sequence homology with mouse X inactive specific transcript protein which is thought to be important in X chromosome
30 inactivation.

This gene is expressed primarily in HSA172 cell and to a lesser extent in normal ovary tissue, ovarian cancer, frontal cortex and brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
35 biological sample and for diagnosis of diseases and conditions: ovarian tumor, schizophrenia and other neurological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for

- differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and neural system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., ovary and other reproductive tissue, and brain and other
- 5 tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.
- 10 The tissue distribution and homology to X inactive specific transcript protein indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of reproductive system tumors and CNS tumors.

FEATURES OF PROTEIN ENCODED BY GENE NO: 161

- 15 This gene is expressed primarily in adipose cell and to a lesser extent in liver and prostate.
- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: obesity and liver
- 20 disorder. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the adipose cell, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., adipose cells, liver, and
- 25 prostate, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.
- 30 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of obesity and liver disorder.

FEATURES OF PROTEIN ENCODED BY GENE NO: 162

- 35 The translation product of this gene shares sequence homology with yeast ubiquitin activating enzyme homolog which is thought to be important in protein posttraslation processing.

This gene is expressed primarily in stromal cell and to a lesser extent in retina, H. Atrophic Endometrium, colon carcinoma and myeloid progenitor cell.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: defects of stromal cell development, neuronal growth disorders and tumors. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and neural system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., retinal cells, endometrium, colon, and bone marrow, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to ubiquitin-activating enzyme homolog indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis or treatment of some type of tumors, fucosidosis and neuronal growth disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 163

This gene is expressed primarily in primary breast cancer and hemangiopericytoma and to a lesser extent in adult brain and cerebellum.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: breast cancer, leukemia and cerebellum disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system and neural system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., mammary tissue, brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis or treatment of various tumors and disease involved in neural system.

5 **FEATURES OF PROTEIN ENCODED BY GENE NO: 164**

The translation product of this gene shares sequence homology with proline rich proteins. Recently, another group has also cloned this gene, calling it CD84 leukocyte antigen, a new member of the Ig superfamily. (See Accession No. U82988, see also, Blood 90 (6), 2398-2405 (1997).)

10 This gene is expressed primarily in Weizmann olfactory tissue and osteoclastoma and to a lesser extent in anergic T-cell.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: ostsis and immune
15 disease. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., olfactory tissue, bone, and
20 blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

25 The tissue distribution and homology to the Ig superfamily indicate that the protein product of this clone is useful for treatment of osteoporosis, autoimmune disease, and other immune disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 165

30 This gene is expressed primarily in atrophic endometrium and colon cancer and to a lesser extent in some fetal tissues.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: tumors. Similarly,
35 polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system,

expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., endometrium, colon, and fetal tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of tumors, specifically endometrium and colon tumors.

FEATURES OF PROTEIN ENCODED BY GENE NO: 166

This gene is expressed primarily in human primary breast cancer and to a lesser extent in activated monocyte. Although the predicted signal sequence is identified in Table 1, other upstream sequences are also relevant. Preferred polypeptide fragments comprise the amino acid sequence: VTQPKHLSASMGGSEIPFSFYYPWELAXXPXVRISWRRGHFHG QSFYSTRPPSIHKDYVNRLFLNWTEGQESGFLRISNLRKEDQSVYFCRVELDTRRS (SEQ ID NO: 641), as well as N-terminal and C-terminal deletions. Also preferred are polynucleotide fragments encoding these polypeptide fragments.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: breast cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., mammary tissue, and blood cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis of breast cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 167

This gene is expressed primarily in fetal tissues and to a lesser extent in adult lung. This gene has also been mapped to chromosomal location 9q34, and thus, can be used as a marker for linkage analysis for chromosome 9.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the embryo tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., fetal tissues, and lung, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

FEATURES OF PROTEIN ENCODED BY GENE NO: 168

The translation product of this gene shares sequence homology with Ig Heavy Chain which is thought to be important in immune response.

This gene is expressed primarily in prostate cancer tissue specifically

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: prostate cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the prostate, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., prostate, tissue and cells of the immune system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

FEATURES OF PROTEIN ENCODED BY GENE NO: 169

The translation product of this gene shares sequence homology with cytosolic acyl coenzyme-A hydrolase, which is thought to be important in neuron-specific fatty acid metabolism. The gene represented by this contig has since been published by Hajra and colleagues (GenBank Accession No. U91316).

This gene is expressed primarily in human pituitary gland and to a lesser extent in colorectal cancer tissue. This gene has also been observed in the LNCAP cell line.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: hyperlipidemias of familial and/or idiopathic origins. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly blood, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., pituitary and colon, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to rat cytosolic acyl coenzyme-A hydrolase indicate that polynucleotides and polypeptides corresponding to this gene are useful for the detection or treatment of hyperlipidemia disease states by virtue of the ability of specific drugs to activate the enzyme.

FEATURES OF PROTEIN ENCODED BY GENE NO: 170

The translation product of this gene shares sequence homology with a *Caenorhabditis elegans* gene which is thought to be important in organism development.

This gene is expressed primarily in human synovial sarcoma tissue, bone marrow, and to a lesser extent in human brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, of bone, specifically synovial sarcoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the bone, connective tissues and possibly immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., synovial tissue, bone marrow, brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another

tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

5 The tissue distribution and homology to *Caenorhabditis elegans* indicate that polynucleotides and polypeptides corresponding to this gene are useful as a diagnostic and/or therapeutic modality directed at the detection and/or treatment of connective tissue sarcomas or other related bone diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 171

10 The translation product of this gene shares sequence homology with beta1-6GlcNAc transferase which is thought to be important in the transfer and metabolism of beta1-6, N-acetylglucosamine. This gene product has previously been shown to suppress melanoma lung metastasis in both syngeneic and nude mice, decreased invasiveness into the matrigel, and inhibition of cell attachment to collagen and laminin
15 without affecting cell growth.

This gene is expressed primarily in human testes and prostate tissues, and to a lesser extent in kidney, medulla, and pancreas.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
20 biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer particularly melanoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at
25 significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., testes and other reproductive tissue, prostate, kidney, pancreas, brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard
30 gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to beta1-6GlcNAc transferase indicate that the protein product of this clone is useful for the development of diagnostic and/or therapeutic modalities directed at the detection and/or treatment of cancer, the metastasis
35 of malignant tissue or cells. Defects in this potentially secreted enzyme may play a role in metastasis.

FEATURES OF PROTEIN ENCODED BY GENE NO: 172

This gene is expressed primarily in fetal spleen and liver.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions: immune disorders,
Wilm's tumor disease, hepatic disorders, and hematopoietic disorders. Similarly,
polypeptides and antibodies directed to these polypeptides are useful in providing
immunological probes for differential identification of the tissue(s) or cell type(s). For a
10 number of disorders of the above tissues or cells, particularly of the hematopoiesis and
immune systems, expression of this gene at significantly higher or lower levels may be
routinely detected in certain tissues and cell types (e.g., spleen and liver, and cancerous
and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or
spinal fluid) or another tissue or cell sample taken from an individual having such a
15 disorder, relative to the standard gene expression level, i.e., the expression level in
healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for the treatment and identification of fetal defects
along with correcting diseases that affect hematopoiesis and the immune system.

20

FEATURES OF PROTEIN ENCODED BY GENE NO: 173

The translation product of this gene shares sequence homology with ret II
oncogene which is thought to be important in Hirschsprung disease and many types of
cancers.

25 This gene is expressed in multiple tissues including the lymphatic system, brain,
and thyroid.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for identification of the tissue(s) or cell type(s) present in a biological sample
and for diagnosis of diseases and conditions: Hirschsprung disease and multiple
30 cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful
in providing immunological probes for identification of the tissue(s) or cell type(s). For
a number of disorders of the above tissues or cells, particularly of the immune and
central nervous system, expression of this gene at significantly higher or lower levels
may be routinely detected in certain tissues and cell types (e.g., lymphoid tissue,
35 thyroid, and brain and other tissue of the nervous system, and cancerous and wounded
tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
another tissue or cell sample taken from an individual having such a disorder, relative to

the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to ret II oncogene indicate that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of various cancers. It would also be useful for the diagnosis and treatment of Hirschsprung disease. Preferred polypeptides of the invention comprise the amino acid sequence: MEAQQVNEAESAREQLQXLHDQIAGQKASKQELETelerLKQEFHYIEEDLY RTKNTLQSRIKDRDEEIQKLRNQLTNKTLNSSQSELENRLHQLTETLIQKQTMLESLSSTEKNSL VFQLERLEQQMNSASGSSSNGSSINMSGIDNGEGTRLRNVPVLFNDTETNLAGMYGKVRKAAS
10 SIDQFSIRLGIFLRRYPiARVFVIIYMALLHLWVMIVLLTYTPem HHDQPYGK (SEQ ID NO: 642).

FEATURES OF PROTEIN ENCODED BY GENE NO: 174

The translation product of this gene shares sequence homology with testis enhanced gene transcript which is thought to be important in regulation of human development.
15

This gene is expressed primarily in infant brain and to a lesser extent in a variety of other tissues and cell types, including the prostate, testes, monocytes, macrophages, dendritic cells, keratinocytes, and adipocytes.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neurological, developmental, immune and inflammation disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes
20 for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, prostate, testes and other reproductive tissue, blood cells, keratinocytes, and adipocytes, and
25 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.
30

The tissue distribution and homology to testis enhanced gene transcript indicate that the protein product of this clone is useful for diagnosis and treatment of disorders involving the developing brain and the immune system.
35

FEATURES OF PROTEIN ENCODED BY GENE NO: 175

This gene is expressed primarily in prostate and to a lesser extent in various other tissues, including placenta.

- 5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancers, especially of the prostate. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for
- 10 differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the prostate, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., prostate and placenta, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell
- 15 sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- The tissue distribution indicates that the protein product of this clone is useful for diagnosis and treatment of prostate disorders and cancer. It may also be useful for
- 20 the diagnosis and treatment of endocrine disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 176

- The translation product of this gene shares sequence homology with *Sacchromyces cerevisiae* YNT20 gene which is thought to be important in
- 25 mitochondrial function.

This gene is expressed at a particularly high level in muscle tissue.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases related to such tissues and cell types
- 30 including: muscle wasting diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neuromuscular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell
- 35 types (e.g., muscle and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,

the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to the YNT20 gene indicate that this protein is useful for treatment and detection of neuromuscular diseases caused by loss of mitochondrial function. For example this gene or its protein product could be used in replacement therapy for such diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 177

This gene is expressed primarily in the brain and to a lesser extent in kidney, placenta, smooth muscle, heart and lung.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: neuromuscular diseases, degenerative diseases of the central nervous system, and heart disease. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neuromuscular system, central nervous system, and heart, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, kidney, placenta, muscle, heart and lung, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

This gene or its protein product could also be used for replacement therapy for the above mentioned diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 178

The translation product of this gene shares sequence homology with caldesmon which is thought to be important in the cellular response to changes in glucose levels.

This gene is expressed primarily in multiple tissues including brain and retina.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: central nervous system disorders and retinopathy. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for identification of the tissue(s) or cell

type(s). For a number of disorders of the above tissues or cells, particularly of the CNS disorders and retinopathy, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, and retinal tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to caldesmon indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment of retinopathies.

FEATURES OF PROTEIN ENCODED BY GENE NO: 179

The translation product of this gene shares sequence homology with mouse fibrosin protein which is thought to be important in regulation of fibrinogenesis in certain chronic inflammatory diseases.

This gene is expressed primarily in amniotic cells and breast tissue.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of breast cancer and abnormal embryo development. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., amniotic cells, and mammary tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to fibrosin indicate that the protein product of this clone is useful for treatment of breast cancer. This gene or its protein product could be used in replacement therapy for breast cancer. In addition the protein product of this gene is useful in the treatment of chronic inflammatory diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 180

This gene is expressed several infant tissues including brain and liver and various adult tissues including brain, lung, liver, testes, and prostate.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, brain cancer, lung cancer, liver cancer and cancers of the reproductive system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, hepatic system, and reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, lung, liver, testes and other reproductive tissue, and prostate, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution of this gene product indicates that the protein product of this clone is involved in growth regulation and could be used as a growth factor or growth blocker in a variety of settings including treatment of cancers.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 181

This gene is expressed primarily in activated monocytes and to a lesser extent in melanocytes and dendritic cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of immune system diseases and cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., blood cells, melanocytes, and dendritic cells, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein product of this clone could be involved in growth regulation and could be used as a growth factor or growth blocker in a variety of settings including treatment of cancers.

FEATURES OF PROTEIN ENCODED BY GENE NO: 182

This gene is expressed primarily in placenta and several tumors of various tissue origin and to a lesser extent in normal tissues including liver, lung, brain, and skin,

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of cancers of all kinds. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders
10 of the above tissues or cells, particularly of the central nervous system, respiratory system and skin, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., liver, lung, brain and other tissues of the nervous system, and skin, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or
15 cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The high expression of this gene in multiple tumors indicates that the protein product of the clone may be involved in cell growth control and therefore would be
20 useful for treatment of certain cancers. Likewise molecules developed to block the activity of the protein product of this clone could be used to block its potential role in tumor growth promotion.

FEATURES OF PROTEIN ENCODED BY GENE NO: 183

25 The translation product of this gene shares sequence homology with the mouse Ndr1 gene which is thought to be important in cancer progression.

This gene is expressed multiple cell types and tissues including brain, lung, kidney, bone marrow, liver, and spleen.

Therefore, polynucleotides and polypeptides of the invention are useful as
30 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of all types of cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous, immune, and endocrine
35 systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, lung, kidney, bone marrow, liver and spleen, and cancerous and wounded

tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

5 The tissue distribution and homology to Ndr1 gene, which is thought to be involved in cancer progression, indicate that polynucleotides and polypeptides corresponding to this gene are useful for treatment of certain cancers. Likewise molecules developed to block the activity of the protein product of this clone could be used to block its potential role in tumor growth promotion.

10

FEATURES OF PROTEIN ENCODED BY GENE NO: 184

This gene is expressed primarily in early stage human brain and liver and to a lesser extent in several other fetal tissues.

15 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions: brain and liver cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the
20 central nervous system and immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., brain and other tissue of the nervous system, liver, and fetal tissue, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder,
25 relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The expression of this gene in embryonic tissues indicates that the protein could be involved in growth regulation and could be used as a growth factor or growth blocker in a variety of settings including treatment of cancers.

30

FEATURES OF PROTEIN ENCODED BY GENE NO: 185

This gene is expressed primarily in infant and embryonic brain.

35 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of degenerative nervous system disorders and brain cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell

type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., embryonic tissue, brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The expression of this gene in embryonic tissues indicates that the protein could be involved in growth regulation and could be used as a growth factor or growth blocker in a variety of settings including treatment of cancers.

FEATURES OF PROTEIN ENCODED BY GENE NO: 186

This gene is expressed primarily in multiple tissues including placenta, fetal lung, fetal liver, and brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of all types of cancers including liver, brain and lung. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, pulmonary system, and hepatic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues and cell types (e.g., placenta, lung, liver, and brain and other tissue of the nervous system, and cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The expression of this gene in embryonic tissues indicates that the protein could be involved in growth regulation and could be used as a growth factor or growth blocker in a variety of settings including treatment of cancers.

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
1	HTTEZ21	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	11	582	1	582	177	177	313	1	18	19	22
1	HTTEZ21	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	197	1020	296	830	442	442	499	1	18	19	22
2	HBGBW52	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	12	465	1	465	81	81	314	1	30	31	128
2	HBGBW52	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	198	524	229	343		196	500	1	20	21	33
3	HCUFM41	97897 02/26/97 209043 05/15/97	ZAP Express	13	474	1	474	1	1	315	1	24	25	28
3	HCUFM41	97897 02/26/97 209043 05/15/97	ZAP Express	199	332	1	319	35	35	501	1	24	25	28

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
4	HCUFQ22	97897 02/26/97 209043 05/15/97	ZAP Express	14	314	1	298	122	122	316	1	34	35	64
5	HCUFV01	97897 02/26/97 209043 05/15/97	ZAP Express	15	613	1	613	30	30	317	1	18	19	21
6	HCUGA50	97897 02/26/97 209043 05/15/97	ZAP Express	16	356	1	356	239	239	318	1	22	23	39
7	HCUIM14	97897 02/26/97 209043 05/15/97	ZAP Express	17	414	185	414	278	278	319	1	26	27	33
8	HLD0U93	97897 02/26/97 209043 05/15/97	pCMVSPORT 3.0	18	469	1	469	77	77	320	1	44	45	88
9	HEIAX07	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	19	550	1	550	129	129	321	1	21	22	23

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
9	HEIAX07	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	200	376	9	376		1	502	1	8	9	15
10	HSAXR76	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	20	741	55	741	190	190	322	1			27
11	HNGJJ68	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	21	991	1	991	62	62	323	1	30	31	64
11	HNGJJ68	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	201	1192	253	1137		409	503	1			19
12	HCFAW04	97897 02/26/97 209043 05/15/97	pSport1	22	653	1	653	64	64	324	1	30	31	196
12	HCFAW04	97897 02/26/97 209043 05/15/97	pSport1	202	589	1	513	109	109	504	1			29

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
13	HLMV65	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	23	1486	596	1418	102	102	325	1	54	55	252
13	HLMV65	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	203	847	1	839	87	87	505	1	30	31	75
13	HLMV65	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	204	852	75	850		690	506	1			10
13	HTXEF04	209235 09/04/97	Uni-ZAP XR	205	1354	54	1354	100	100	507	1	33	34	207
14	HPMFD84	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	24	2323	1017	2059	1242	1242	326	1	21	22	68
14	HPMFD84	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	206	1378	113	1226	303	303	508	1	25	26	36
15	HE6DB26	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	25	683	1	683	304	304	327	1	30	31	84

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
15	HE6DB26	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	207	1166	281	884	567	567	509	1	18	19	19
16	HHFFL33	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	26	2036	14	1959	214	214	328	1	20	21	36
17	HODBD33	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	27	717	1	717	70	70	329	1	30	31	63
17	HODBD33	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	208	697	2	697	33	33	510	1	31	32	32
18	HMDAE90	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	28	495	1	495	39	39	330	1	24	25	35
19	HOUAW01	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	29	556	1	556	116	116	331	1	19	20	23

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
20	HBJAE44	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	30	434	1	434	78	78	332	1	35	36	40
21	HCFME41	97897 02/26/97 209043 05/15/97	pSport1	31	715	1	715	87	87	333	1	30	31	111
21	HCFME41	97897 02/26/97 209043 05/15/97	pSport1	209	932	274	932	387	387	511	1	27	28	28
22	HOGCO71	97897 02/26/97 209043 05/15/97	pCMVSPORT 2.0	32	486	1	486	137	137	334	1	21	22	106
23	HOSEX08	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	33	725	1	725	436	436	335	1	30	31	50
23	HOSEX08	97897 02/26/97 209043 05/15/97	Uni-ZAP XR	210	661	1	647	81	81	512	1	25	26	26

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
24	HSKNJ72	97897 02/26/97 209043 05/15/97	pBluescript	34	437	1	437	85	85	336	1	30	31	48
25	HEBEB69	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	35	943	1	943	196	196	337	1	30	31	41
25	HEBEB69	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	211	592	1	534	72	72	513	1	24	25	33
26	HE6EH18	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	36	604	1	604	375	375	338	1	20	21	76
26	HE6EH18	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	212	938	1	509		17	514	1	30	31	47
27	HSAUZ47	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	37	349	1	349		201	339	1	20	21	31

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
28	HSSDM73	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	38	672	1	672	22	22	340	1	38	39	42
29	HBMVK68	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	39	1908	135	1908	309	309	341	1	20	21	26
30	HMKDC66	97898 02/26/97 209044 05/15/97	pSport1	40	458	93	458	147	147	342	1	24	25	26
31	HMKCU94	97898 02/26/97 209044 05/15/97	pSport1	41	1153	500	1153	427	427	343	1	30	31	157
31	HMKCU94	97898 02/26/97 209044 05/15/97	pSport1	213	1079	502	896	739	739	515	1	23	24	43
32	HRDEW41	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	42	1983	1092	1983	27	27	344	1	11	12	520

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
32	HRDEW41	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	214	3791	2757	3357		2030	516	1			3
33	HTOIN06	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	43	1406	1	695		19	345	1	19	20	39
34	HBGDA21	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	44	1391	851	1153	74	74	346	1	30	31	234
34	HBGDA21	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	215	1334	822	1036		638	517	1	18	19	174
35	HFGAK75	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	45	1569	768	1569	14	14	347	1	19	20	169
35	HFGAK75	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	216	1511	770	1404	844	844	518	1	32	33	43

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
36	HHPBD40	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	46	1924	1	1681	62	62	348	1	19	20	43
37	HOVCL83	97898 02/26/97 209044 05/15/97	pSport1	47	475	252	396	141	141	349	1	37	38	78
38	HBCAY62	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	48	346	1	346	61	61	350	1	19	20	24
39	HBICM48	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	49	1366	882	1300	177	177	351	1	30	31	274
39	HBICM48	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	217	642	192	581		448	519	1			13
40	HLTCL35	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	50	1405	110	1404	61	61	352	1	30	31	47

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
40	HLTCL35	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	218	1241	1	1241	172	172	520	1	21	22	30
41	HLHCK50	97898 02/26/97 209044 05/15/97	Uni-ZAP XR	51	504	207	485	222	222	353	1			3
42	HRSAN45	97899 02/26/97 209045 05/15/97	ZAP Express	52	777	1	214	113	113	354	1	24	25	52
43	HSNBB14	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	53	602	1	419	41	41	355	1	59	60	132
43	HSNBB14	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	219	1080	186	686	399	399	521	1	26	27	47
44	HMA38	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	54	1749	222	1749	166	166	356	1	30	31	204

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
44	HMA38	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	220	1258	149	1190	254	254	522	1	18	19	26
45	HSKDK47	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	55	1896	596	1614	650	650	357	1	33	34	47
46	HOSFH03	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	56	1753	555	1753	414	414	358	1	18	19	73
46	HOSFH03	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	221	1693	554	1693		526	523	1	25	26	58
47	HOGAV75	97899 02/26/97 209045 05/15/97	pCMVSPORT 2.0	57	1220	690	1024	128	128	359	1	30	31	102
47	HOGAV75	97899 02/26/97 209045 05/15/97	pCMVSPORT 2.0	222	1196	712	1163		1097	524	1			19

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
48	HFCAl74	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	58	1049	362	1049	335	335	360	1	33	34	48
49	HAGBI17	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	59	1776	854	1737	189	189	361	1	30	31	179
49	HAGBI17	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	223	1791	979	1791	1164	1164	525	1	18	19	40
50	HLFBC91	97899 02/26/97 209045 05/15/97	pBluescript SK-	60	443	1	443	164	164	362	1	21	22	25
51	HPRCA31	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	61	2888	1909	2888	90	90	363	1	30	31	224
51	HPRCA31	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	224	2517	1597	2517	1953	1953	526	1	18	19	57

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
52	HPRCE95	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	62	1851	1568	1736	139	139	364	1	30	31	349
52	HPRCE95	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	225	2424	299	2309	530	527	1	17	18	21	
53	HHTLC66	97899 02/26/97 209045 05/15/97	ZAP Express	63	3542	883	3492	964	964	365	1	25	26	467
54	HMADJ02	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	64	883	237	883	229	229	366	1	30	31	152
54	HMADJ02	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	226	1080	242	1033	436	436	528	1	24	25	39
55	HPRCU93	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	65	1541	1	1541	236	236	367	1	30	31	373

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
55	HPRCU93	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	227	1336	4	1336	946	946	529	1	25	26	128
56	HSAXS65	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	66	732	41	698	163	163	368	1	18	19	83
56	HSAXS65	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	228	2043	1133	1756	1262	1262	530	1	20	21	82
57	HKTAG35	209011 04/28/97	Uni-ZAP XR	67	629	1	629	264	264	369	1			21
57	HMEFX42	97899 02/26/97 209045 05/15/97	Lambda ZAP II	229	540	25	536	227	227	531	1			20
58	HHFHN61	97899 02/26/97 209045 05/15/97	Uni-ZAP XR	68	1751	375	1751	95	95	370	1	19	20	227
59	HCWEF90	97899 02/26/97 209045 05/15/97	ZAP Express	69	508	1	508	22	22	371	1	30	31	79

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
59	HCWEF90	97899 02/26/97 209045 05/15/97	ZAP Express	230	448	9	448		1	532	1	22	23	75
60	HHGCM20	97899 02/26/97 209045 05/15/97	Lambda ZAP II	70	245	1	245	93	93	372	1	1	2	51
61	HFRAU10	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	71	361	1	361	1	1	373	1	30	31	61
61	HFRAU10	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	231	407	1	407	210	210	533	1	17	18	60
62	HATDT67	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	72	713	8	713	169	169	374	1	30	31	40
62	HATDT67	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	232	830	190	580	329	329	534	1	28	29	39

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
63	HOUBG93	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	73	862	1	862	67	67	375	1	30	31	44
63	HOUBG93	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	233	932	138	905	287	287	535	1			2
64	HMWEX24	97900 02/26/97 209046 05/15/97	Uni-Zap XR	74	4602	4162	4525	730	730	376	1	30	31	203
64	HMWEX24	97900 02/26/97 209046 05/15/97	Uni-Zap XR	234	2786	2406	2739	2577	2577	536	1	22	23	36
65	HSGBA84	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	75	1255	1	1195	112	112	377	1	28	29	29
66	HTOCD52	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	76	475	1	475	13	13	378	1	30	31	136

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
66	HTOCD52	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	235	458	1	458	26	26	537	1			14
67	HTGCP16	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	77	465	25	299	74	74	379	1	33	34	41
68	HKIXR69	97900 02/26/97 209046 05/15/97	pBluescript	78	1907	1627	1730	26	26	380	1	30	31	468
68	HKIXR69	97900 02/26/97 209046 05/15/97	pBluescript	236	591	1	444	251	251	538	1			18
69	HETGJ09	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	79	1168	136	1168	267	267	381	1	20	21	29
70	HOBN61	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	80	1285	132	1285	292	292	382	1	27	28	29

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
71	HFFAH94	97900 02/26/97 209046 05/15/97	Lambda ZAP II	81	1290	768	1054	701	701	383	1	21	22	138
72	HBIAB95	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	82	684	1	684	119	119	384	1	30	31	74
73	HSQEL25	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	83	2024	1609	1953	200	200	385	1	30	31	521
73	HSQEL25	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	237	1286	391	959		1204	539	1	9	10	11
74	HEBEG68	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	84	931	14	537	85	85	386	1	25	26	137
75	HBIAB39	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	85	825	59	802	66	66	387	1	30	31	186

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	5' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
75	HBIAB39	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	238	734	1	734	1	1	540	1	37	38	108
75	HBIAB39	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	239	809	80	794		294	541	1	15	16	106
76	HTXDU73	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	86	1238	36	918	17	17	388	1			1
77	HOEAS24	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	87	1460	9	1458	166	166	389	1	53	54	299
77	HOEAS24	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	240	2201	841	2080	507	507	542	1	43	44	136
77	HOEAS24	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	241	1661	311	1520	390	390	543	1	35	36	424

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	5' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
78	HTEIY30	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	88	1395	567	1395	639	639	390	1	36	37	49
79	HSKNE46	97900 02/26/97 209046 05/15/97	pBluescript	89	1186	352	1186	540	540	391	1	49	50	61
79	HSKNE46	97900 02/26/97 209046 05/15/97	pBluescript	242	1146	329	1146	564	564	544	1	21	22	39
80	HPMFL27	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	90	1821	1203	1614	1503	1503	392	1	30	31	79
81	HMWDN32	97900 02/26/97 209046 05/15/97	Uni-Zap XR	91	862	253	862	359	359	393	1	32	33	36
82	HPRAX55	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	92	696	349	696	98	98	394	1	30	31	180

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
82	HPRAX55	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	243	1350	265	1230	348	348	545	1	32	33	58
83	HHFFW36	97900 02/26/97 209046 05/15/97	Uni-ZAP XR	93	1886	1	1759	197	197	395	1			21
84	HE2PL77	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	94	1774	742	1772	785	785	396	1	21	22	60
85	HSDFV29	209076 05/22/97	Uni-ZAP XR	95	2503	1	1648	206	206	397	1	32	33	152
85	HCQAV53	97901 02/26/97 209047 05/15/97	Lambda ZAP II	244	1529	72	911	191	191	546	1	20	21	33
86	HTPEG42	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	96	2801	418	2801	234	234	398	1	30	31	480
86	HTPEG42	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	245	1537	1	1537	125	125	547	1	21	22	367

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
87	HLHDR57	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	97	1631	916	1631	1	1	399	1	1	2	423
88	HAUAV32	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	98	504	26	504	197	197	400	1	23	24	78
88	HAUAV32	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	246	506	1	499	183	183	548	1	32	33	77
89	HNEBI60	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	99	1416	145	1416	456	456	401	1	18	19	74
89	HNEBI60	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	247	1348	84	1348	363	363	549	1	21	22	47
90	HSJC16	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	100	2847	1	2847		2	402	1			20

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
91	HTSEL31	97901 02/26/97 209047 05/15/97	pBluescript	101	1394	608	1346	602	602	403	1	23	24	87
92	HAUBL57	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	102	794	1	794	518	518	404	1	30	31	92
92	HAUBL57	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	248	1766	42	1766	356	356	550	1	30	31	168
92	HAUBL57	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	249	2664	47	1708		147	551	1	18	19	124
93	HODAS59	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	103	1544	898	1531	975	975	405	1			21
94	HE6CT48	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	104	871	106	871	248	248	406	1	34	35	174

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
94	HE6CT48	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	250	865	97	865	258	258	552	1	19	20	177
95	HMDAA61	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	105	404	1	404	16	16	407	1	21	22	64
95	HMDAA61	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	251	2082	852	2074	829	829	553	1	22	23	72
96	HAQBK61	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	106	1542	506	1542	122	122	408	1	51	52	280
96	HAQBK61	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	252	1482	508	1482		633	554	1	15	16	45
96	HCUHB01	209215 08/21/97	ZAP Express	253	834	1	834	82	82	555	1	40	41	251
97	HAQBF73	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	107	2327	1528	2327	465	465	409	1	30	31	284

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
97	HAQBF73	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	254	1508	885	1508		988	556	1			19
98	HAQBT94	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	108	1062	157	1062	172	172	410	1	28	29	187
99	HETHE07	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	109	2539	275	2501	903	903	411	1	30	31	237
99	HETHE07	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	255	2514	592	2431	176	176	557	1	30	31	217
99	HETHE07	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	256	2357	465	2288		1151	558	1	12	13	82
100	HLQAB52	97901 02/26/97 209047 05/15/97	Lambda ZAP II	110	1751	969	1751	4	4	412	1	46	47	192

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
100	HLQAB52	97901 02/26/97 209047 05/15/97	Lambda ZAP II	257	689	218	655	314	314	559	1	18	19	95
100	HEONN58	209119 06/12/97	pSport1	258	2377	5	2377	25	25	560	1	28	29	54
101	HCRAM28	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	111	1117	1	1117		1	413	1	19	20	21
101	HIBEK16	209627 02/12/98	Other	259	1193	69	1135	242	242	561	1	24	25	108
102	HE2BG03	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	112	1313	128	1313	271	271	414	1	30	31	51
102	HE2BG03	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	260	1262	26	1262	35	35	562	1	35	36	50
103	HEBDJ82	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	113	1654	553	1654	709	709	415	1			32

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
104	HCUBC79	97901 02/26/97 209047 05/15/97	ZAP Express	114	1171	540	1171	337	337	416	1	30	31	163
104	HCUBC79	97901 02/26/97 209047 05/15/97	ZAP Express	261	1179	626	1161	335	335	563	1	30	31	253
104	HCUBC79	97901 02/26/97 209047 05/15/97	ZAP Express	262	1162	629	1131	942	942	564	1			18
105	HSVAF07	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	115	842	373	800	100	100	417	1	65	66	174
105	HSVAF07	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	263	735	290	735			565	1			
105	HSVAF07	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	264	783	416	783		413	566	1	33	34	73

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
106	HT3AM65	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	116	1640	187	1470	581	581	418	1	30	31	50
106	HT3AM65	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	265	1638	301	1405	119	119	567	1	30	31	263
106	HT3AM65	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	266	1455	148	1188	438	438	568	1	24	25	70
107	HE6DK18	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	117	952	418	906	499	499	419	1	28	29	120
108	HEBEK93	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	118	1256	21	1079	301	301	420	1	30	31	159
108	HEBEK93	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	267	1086	25	1050	227	227	569	1	23	24	34

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
109	HJPCM10	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	119	1143	171	1051	175	175	421	1	50	51	154
109	HJPCM10	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	268	1003	21	1003	115	115	570	1	34	35	104
109	HJPCM10	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	269	1234	174	1015	232	232	571	1	27	28	132
110	HSXBL78	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	120	1782	1	1720	138	138	422	1	32	33	204
111	HOEAW81	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	121	610	18	609	50	50	423	1	30	31	67
111	HOEAW81	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	270	574	1	566	337	337	572	1	27	28	32

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
112	HOEAP41	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	122	526	185	375	143	143	424	1	21	22	25
113	HEAAR60	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	123	2081	1179	1976	48	48	425	1	30	31	299
113	HEAAR60	97901 02/26/97 209047 05/15/97	Uni-ZAP XR	271	1731	889	1626	886	886	573	1	18	19	28
114	HTXGS75	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	124	1717	764	1640	76	76	426	1			13
115	HOVBA03	97902 02/26/97 209048 05/15/97	pSport1	125	804	1	804	145	145	427	1	15	16	198
115	HOVBA03	97902 02/26/97 209048 05/15/97	pSport1	272	1320	77	637	280	280	574	1	22	23	40

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
116	HGBGK76	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	126	431	1	431	73	73	428	1	38	39	47
116	HGBGK76	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	273	515	1	515	43	43	575	1	20	21	30
117	HBMUW78	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	127	3752	3465	3752	748	748	429	1	30	31	370
117	HBMUW78	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	274	2995	2738	2995	2777	2777	576	1	18	19	29
118	HASAS24	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	128	1144	669	1144	896	896	430	1			30
119	HSIDN55	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	129	1830	1234	1830	1265	1265	431	1			24

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	5' NT of Clone Seq.	5' NT of AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
120	HGBGZ64	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	130	1864	1505	1741	1578	432	1	37	38	53
121	H6EBJ64	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	131	2041	1	1214	46	433	1	35	36	176
121	H6EBJ64	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	275	1990	8	1128	71	577	1	16	17	92
122	HOECP43	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	132	2012	853	1986	1127	434	1	22	23	77
123	H2CBV31	97902 02/26/97 209048 05/15/97	pBluescript SK-	133	1669	670	1632	962	435	1	25	26	32
124	HPCAD23	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	134	1565	281	1565	274	436	1	25	26	30

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
125	HSPAG15	97902 02/26/97 209048 05/15/97	pSport1	135	2007	1101	2007	1124	1124	437	1	39	40	69
126	HELGH31	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	136	1291	1	1180	107	107	438	1			19
127	HUSHH48	97902 02/26/97 209048 05/15/97	Lambda ZAP II	137	1906	1	1906	184	184	439	1	30	31	43
127	HUSHH48	97902 02/26/97 209048 05/15/97	Lambda ZAP II	276	2436	572	2436	726	726	578	1	30	31	42
128	HLAU95	97902 02/26/97 209048 05/15/97	pSport1	138	1935	1044	1794	1183	1183	440	1	18	19	33
129	HHSCV65	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	139	1446	572	1347	585	585	441	1	25	26	53

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
130	HTTAD57	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	140	1109	639	1109	676	676	442	1	24	25	64
131	HEBGA37	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	141	497	9	497	95	95	443	1			34
132	HEBFU93	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	142	269	1	269	1	1	444	1	30	31	89
132	HEBFU93	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	277	782	408	781		571	579	1	31	32	70
133	HSGSC60	97902 02/26/97 209048 05/15/97	Lambda ZAP II	143	1269	55	1262	55	55	445	1	25	26	350
134	HPMGD24	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	144	1944	97	1871	306	306	446	1	16	17	49

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
135	HPTVC60	97902 02/26/97 209048 05/15/97	pBluescript	145	1021	526	1021	74	74	447	1	30	31	278
135	HPTVC60	97902 02/26/97 209048 05/15/97	pBluescript	278	961	524	961	545	545	580	1	23	24	110
136	HSKNE18	97902 02/26/97 209048 05/15/97	pBluescript	146	1285	5	1285	116	116	448	1	30	31	199
136	HSKNE18	97902 02/26/97 209048 05/15/97	pBluescript	279	1228	9	1228	324	324	581	1	26	27	30
137	HMWIF35	97902 02/26/97 209048 05/15/97	Uni-Zap XR	147	1386	169	1272	165	165	449	1	30	31	258
137	HMWIF35	97902 02/26/97 209048 05/15/97	Uni-Zap XR	280	1327	169	1208	160	160	582	1	23	24	71

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
138	HMWGI25	97902 02/26/97 209048 05/15/97	Uni-Zap XR	148	2098	721	2044	784	784	450	1	18	19	87
139	HSKGF03	97902 02/26/97 209048 05/15/97	pBluescript	149	1847	1689	1847	241	241	451	1	33	34	315
139	HSKGF03	97902 02/26/97 209048 05/15/97	pBluescript	281	799	1	799		243	583	1	12	13	47
140	HMSKE75	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	150	1569	113	1517	417	417	452	1	21	22	52
141	HCMESH30	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	151	1540	538	1540	48	48	453	1	30	31	383
141	HCMESH30	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	282	2196	270	2196	294	294	584	1	32	33	39

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
142	HTWCB92	97902 02/26/97 209048 05/15/97	pSport1	152	1719	690	1575	6	6	454	1	52	53	186
143	HBMDM46	97902 02/26/97 209048 05/15/97	pBluescript	153	863	1	863	195	195	455	1	26	27	163
143	HBMDM46	97902 02/26/97 209048 05/15/97	pBluescript	283	1185	277	1166	621	621	585	1			19
144	HFAMG13	97902 02/26/97 209048 05/15/97	Uni-ZAP XR	154	1101	1	512	40	40	456	1	21	22	46
145	HFXHL79	97903 02/26/97 209049 05/15/97	Lambda ZAP II	155	2031	669	2031	411	411	457	1	23	24	105
145	HFXHL79	97903 02/26/97 209049 05/15/97	Lambda ZAP II	284	1634	615	1485	878	878	586	1	20	21	23

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
146	HSNAK17	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	156	1981	1458	1809	1592	1592	458	1	23	24	70
146	HSNAK17	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	285	1795	1458	1749	1562	1562	587	1	33	34	69
147	HCFBC03	97903 02/26/97 209049 05/15/97	pSport1	157	915	45	912	22	22	459	1	22	23	155
147	HCFBC03	97903 02/26/97 209049 05/15/97	pSport1	286	858	46	858	224	224	588	1	30	31	77
147	HSJAP03	209139 07/03/97	Uni-ZAP XR	287	915	1	915	22	22	589	1	22	23	155
148	HSKGO26	97903 02/26/97 209049 05/15/97	pBluescript	158	2117	51	1422	32	32	460	1	23	24	332
149	HCQAV96	97903 02/26/97 209049 05/15/97	Lambda ZAP II	159	2395	1509	2382	1440	1440	461	1			5

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
150	HSHCC16	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	160	2120	1223	2108	1416	1416	462	1			14
151	HTLEF62	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	161	900	482	900	46	46	463	1	30	31	285
151	HTLEF62	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	288	1517	783	1517	1062	1062	590	1			24
152	HTLAD94	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	162	1003	1	1003	288	288	464	1	30	31	80
152	HTLAD94	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	289	3865	217	1195	281	281	591	1	16	17	38
153	HTSFQ12	97903 02/26/97 209049 05/15/97	pBluescript	163	2196	1607	2180	1611	1611	465	1	30	31	47

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
154	HE6FL83	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	164	1945	271	1840	299	299	466	1	63	64	96
154	HE6FL83	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	290	1910	279	1818	355	355	592	1	39	40	69
155	HTXFJ55	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	165	2933	489	2871	258	258	467	1	30	31	399
155	HTXFJ55	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	291	3276	486	2838		525	593	1	45	46	308
156	HJPCJ76	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	166	2243	343	2221		341	468	1			1
157	HLTED27	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	167	1816	1130	1816	284	284	469	1	31	32	273

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
157	HLTED27	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	292	1695	1098	1548	1306	1306	594	1			22
158	HMKBA64	97903 02/26/97 209049 05/15/97	pSport1	168	945	1	787	208	208	470	1	18	19	192
159	HNFIP24	97903 02/26/97 209049 05/15/97	pBluescript	169	902	46	816	19	19	471	1	26	27	234
160	HCELB21	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	170	1883	798	1869	1001	1001	472	1	45	46	105
160	HCELB21	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	293	1501	438	1501	510	510	595	1			24
161	HAWBA28	97903 02/26/97 209049 05/15/97	pBluescript SK-	171	2100	1642	2100	1722	1722	473	1	23	24	32

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
162	HSAAS44	97903 02/26/97 209049 05/15/97	pBluescript SK-	172	1930	187	1930	65	65	474	1	30	31	571
162	HSAAS44	97903 02/26/97 209049 05/15/97	pBluescript SK-	294	2683	183	2683	431	431	596	1			24
163	HAFAL73	97903 02/26/97 209049 05/15/97	pBluescript SK-	173	1509	962	1451	122	122	475	1	30	31	312
163	HAFAL73	97903 02/26/97 209049 05/15/97	pBluescript SK-	295	1454	961	1420	976	976	597	1			1
164	HSAWF26	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	174	3173	2197	2972	51	51	476	1	21	22	329
164	HSAWF26	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	296	828	52	828	305	305	598	1			8

Gene No.	cDNA Clone ID	ATCC Deposit No.: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
165	HEAAL31	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	175	991	374	970	60	60	477	1	24	25	178
165	HEAAL31	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	297	2416	1387	2413	1473	1473	599	1	18	19	25
166	HFKFX55	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	176	1290	499	1290		688	478	1	25	26	52
167	H2LAO11	97903 02/26/97 209049 05/15/97	pBluescript SK-	177	2290	1	2290	173	173	479	1	22	23	62
168	HPFDZ95	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	178	549	1	549	11	11	480	1	21	22	27
168	HPFDZ95	97903 02/26/97 209049 05/15/97	Uni-ZAP XR	298	545	1	545	17	17	600	1	21	22	27

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
169	HPTTU11	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	179	1509	294	1352	92	92	481	1	30	31	339
169	HPTTU11	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	299	1530	385	1530	562	562	601	1	23	24	61
170	HCFAE79	97904 02/26/97 209050 05/15/97	pSport1	180	1316	985	1250	995	995	482	1	26	27	32
171	HTEDJ34	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	181	777	1	777	51	51	483	1	30	31	48
171	HTEDJ34	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	300	997	244	997	300	300	602	1	23	24	29
172	HODCW06	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	182	791	1	791	14	14	484	1	29	30	38

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
173	HFTAR26	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	183	1405	346	1405	575	575	485	1	20	21	61
174	H2MBF44	97904 02/26/97 209050 05/15/97	pBluescript SK-	184	1596	75	1596	131	131	486	1	24	25	346
174	H2MBF44	97904 02/26/97 209050 05/15/97	pBluescript SK-	301	2345	75	2345	233	233	603	1	56	57	69
175	HE8BI92	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	185	2293	355	2288	67	67	487	1	30	31	237
175	HE8BI92	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	302	2369	2	1946		60	604	1	9	10	24
176	HFTBR48	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	186	1212	462	1180	257	257	488	1	30	31	200

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
176	HFTBR48	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	303	1181	424	1149	663	663	605	1	23	24	35
177	HE9CM64	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	187	1605	770	1554	166	166	489	1	30	31	351
177	HE9CM64	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	304	1537	719	1515		787	606	1	43	44	130
178	HATAV51	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	188	1516	960	1516	8	8	490	1	30	31	265
178	HATAV51	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	305	1493	1	1261	54	54	607	1	18	19	23
179	HAQAF27	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	189	681	287	681		401	491	1			25

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
180	HCEEK08	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	190	1014	703	360	360	492	1	30	31	159
180	HCEEK08	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	306	577	1	577	175	608	1			6
181	HAFUAU18	97904 02/26/97 209050 05/15/97	pBluescript SK-	191	2779	2207	1153	1153	493	1	30	31	279
181	HAFUAU18	97904 02/26/97 209050 05/15/97	pBluescript SK-	307	2860	163	2860	21	609	1	30	31	232
181	HAFUAU18	97904 02/26/97 209050 05/15/97	pBluescript SK-	308	876	275	876	302	610	1	32	33	34
182	HETBY74	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	192	1923	30	1923	45	494	1	33	34	193

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
183	HTOAF35	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	193	2346	1160	2286	178	178	495	1	30	31	205
183	HTOAF35	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	309	2025	840	2025	971	971	611	1	18	19	21
184	HCRBX32	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	194	3054	2004	3054	434	434	496	1	11	12	147
184	HCRBX32	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	310	3026	1966	3026		2131	612	1			9
185	HEBGB80	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	195	907	152	907	297	297	497	1	30	31	64
185	HEBGB80	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	311	712	67	712	107	107	613	1	18	19	29

Gene No.	cDNA Clone ID	ATCC Deposit No: Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	Predicted First AA of Secreted Portion	Last AA of ORF
186	HFAMH74	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	196	1290	84	809	225	225	498	1	30	31	94
186	HFAMH74	97904 02/26/97 209050 05/15/97	Uni-ZAP XR	312	1289	785	1289	927	927	614	1	28	29	30

Table 1 summarizes the information corresponding to each "Gene No." described above. The nucleotide sequence identified as "NT SEQ ID NO:X" was assembled from partially homologous ("overlapping") sequences obtained from the "cDNA clone ID" identified in Table 1 and, in some cases, from additional related DNA clones. The overlapping sequences were assembled into a single contiguous sequence of high redundancy (usually three to five overlapping sequences at each nucleotide position), resulting in a final sequence identified as SEQ ID NO:X.

The cDNA Clone ID was deposited on the date and given the corresponding deposit number listed in "ATCC Deposit No:Z and Date." Some of the deposits contain multiple different clones corresponding to the same gene. "Vector" refers to the type of vector contained in the cDNA Clone ID.

"Total NT Seq." refers to the total number of nucleotides in the contig identified by "Gene No." The deposited clone may contain all or most of these sequences, reflected by the nucleotide position indicated as "5' NT of Clone Seq." and the "3' NT of Clone Seq." of SEQ ID NO:X. The nucleotide position of SEQ ID NO:X of the putative start codon (methionine) is identified as "5' NT of Start Codon." Similarly, the nucleotide position of SEQ ID NO:X of the predicted signal sequence is identified as "5' NT of First AA of Signal Pep."

The translated amino acid sequence, beginning with the methionine, is identified as "AA SEQ ID NO:Y," although other reading frames can also be easily translated using known molecular biology techniques. The polypeptides produced by these alternative open reading frames are specifically contemplated by the present invention.

The first and last amino acid position of SEQ ID NO:Y of the predicted signal peptide is identified as "First AA of Sig Pep" and "Last AA of Sig Pep." The predicted first amino acid position of SEQ ID NO:Y of the secreted portion is identified as "Predicted First AA of Secreted Portion." Finally, the amino acid position of SEQ ID NO:Y of the last amino acid in the open reading frame is identified as "Last AA of ORF."

SEQ ID NO:X and the translated SEQ ID NO:Y are sufficiently accurate and otherwise suitable for a variety of uses well known in the art and described further below. For instance, SEQ ID NO:X is useful for designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the cDNA contained in the deposited clone. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y may be used to generate antibodies which bind specifically to the secreted proteins encoded by the cDNA clones identified in Table 1.

Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X and the predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing a human cDNA of the invention deposited with the ATCC, as set forth in Table 1. The nucleotide sequence of each deposited clone can readily be determined by sequencing the deposited clone in accordance with known methods. The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular clone can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, or the deposited clone. The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include preparing probes or primers from the disclosed sequence and identifying or amplifying the corresponding gene from appropriate sources of genomic material.

Also provided in the present invention are species homologs. Species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for the desired homologue.

The polypeptides of the invention can be prepared in any suitable manner. Such polypeptides include isolated naturally occurring polypeptides, recombinantly produced polypeptides, synthetically produced polypeptides, or polypeptides produced by a combination of these methods. Means for preparing such polypeptides are well understood in the art.

The polypeptides may be in the form of the secreted protein, including the mature form, or may be a part of a larger protein, such as a fusion protein (see below).

It is often advantageous to include an additional amino acid sequence which contains secretory or leader sequences, pro-sequences, sequences which aid in purification, such as multiple histidine residues, or an additional sequence for stability during recombinant production.

5 The polypeptides of the present invention are preferably provided in an isolated form, and preferably are substantially purified. A recombinantly produced version of a polypeptide, including the secreted polypeptide, can be substantially purified by the one-step method described in Smith and Johnson, *Gene* 67:31-40 (1988).

10 Polypeptides of the invention also can be purified from natural or recombinant sources using antibodies of the invention raised against the secreted protein in methods which are well known in the art.

Signal Sequences

15 Methods for predicting whether a protein has a signal sequence, as well as the cleavage point for that sequence, are available. For instance, the method of McGeoch, *Virus Res.* 3:271-286 (1985), uses the information from a short N-terminal charged region and a subsequent uncharged region of the complete (uncleaved) protein. The method of von Heinje, *Nucleic Acids Res.* 14:4683-4690 (1986) uses the information from the residues surrounding the cleavage site, typically residues -13 to +2, where +1
20 indicates the amino terminus of the secreted protein. The accuracy of predicting the cleavage points of known mammalian secretory proteins for each of these methods is in the range of 75-80%. (von Heinje, *supra.*) However, the two methods do not always produce the same predicted cleavage point(s) for a given protein.

25 In the present case, the deduced amino acid sequence of the secreted polypeptide was analyzed by a computer program called SignalP (Henrik Nielsen et al., *Protein Engineering* 10:1-6 (1997)), which predicts the cellular location of a protein based on the amino acid sequence. As part of this computational prediction of localization, the methods of McGeoch and von Heinje are incorporated. The analysis of the amino acid sequences of the secreted proteins described herein by this program provided the results
30 shown in Table 1.

35 As one of ordinary skill would appreciate, however, cleavage sites sometimes vary from organism to organism and cannot be predicted with absolute certainty. Accordingly, the present invention provides secreted polypeptides having a sequence shown in SEQ ID NO:Y which have an N-terminus beginning within 5 residues (i.e., + or - 5 residues) of the predicted cleavage point. Similarly, it is also recognized that in some cases, cleavage of the signal sequence from a secreted protein is not entirely

uniform, resulting in more than one secreted species. These polypeptides, and the polynucleotides encoding such polypeptides, are contemplated by the present invention.

Moreover, the signal sequence identified by the above analysis may not necessarily predict the naturally occurring signal sequence. For example, the naturally occurring signal sequence may be further upstream from the predicted signal sequence. However, it is likely that the predicted signal sequence will be capable of directing the secreted protein to the ER. These polypeptides, and the polynucleotides encoding such polypeptides, are contemplated by the present invention.

10 **Polynucleotide and Polypeptide Variants**

"Variant" refers to a polynucleotide or polypeptide differing from the polynucleotide or polypeptide of the present invention, but retaining essential properties thereof. Generally, variants are overall closely similar, and, in many regions, identical to the polynucleotide or polypeptide of the present invention.

15 "Identity" per se has an art-recognized meaning and can be calculated using published techniques. (See, e.g.: (COMPUTATIONAL MOLECULAR BIOLOGY, Lesk, A.M., ed., Oxford University Press, New York, (1988); BIOCOMPUTING: INFORMATICS AND GENOME PROJECTS, Smith, D.W., ed., Academic Press, New York, (1993); COMPUTER ANALYSIS OF SEQUENCE DATA, PART I, Griffin, A.M., and Griffin, H.G., eds., Humana Press, New Jersey, (1994); SEQUENCE ANALYSIS IN MOLECULAR BIOLOGY, von Heinje, G., Academic Press, (1987); and SEQUENCE ANALYSIS PRIMER, Gribskov, M. and Devereux, J., eds., M Stockton Press, New York, (1991).) While there exists a number of methods to measure identity between two polynucleotide or polypeptide sequences, the term "identity" is well known to skilled artisans. (Carillo, H., and Lipton, D., SIAM J Applied Math 48:1073 (1988).) Methods commonly employed to determine identity or similarity between two sequences include, but are not limited to, those disclosed in "Guide to Huge Computers," Martin J. Bishop, ed., Academic Press, San Diego, (1994), and Carillo, H., and Lipton, D., SIAM J Applied Math 48:1073 (1988). Methods for aligning polynucleotides or polypeptides are codified in computer programs, including the GCG program package (Devereux, J., et al., Nucleic Acids Research (1984) 12(1):387 (1984)), BLASTP, BLASTN, FASTA (Atschul, S.F. et al., J. Molec. Biol. 215:403 (1990), Bestfit program (Wisconsin Sequence Analysis Package, Version 8 for Unix, Genetics Computer Group, University Research Park, 575 Science Drive, Madison, WI 53711 (using the local homology algorithm of Smith and Waterman, Advances in Applied Mathematics 2:482-489 (1981).)

When using any of the sequence alignment programs to determine whether a particular sequence is, for instance, 95% identical to a reference sequence, the parameters are set so that the percentage of identity is calculated over the full length of the reference polynucleotide and that gaps in identity of up to 5% of the total number of nucleotides in the reference polynucleotide are allowed.

A preferred method for determining the best overall match between a query sequence (a sequence of the present invention) and a subject sequence, also referred to as a global sequence alignment, can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci. 6:237-245 (1990).) The term "sequence" includes nucleotide and amino acid sequences. In a sequence alignment the query and subject sequences are either both nucleotide sequences or both amino acid sequences. The result of said global sequence alignment is in percent identity. Preferred parameters used in a FASTDB search of a DNA sequence to calculate percent identity are: Matrix=Unitary, k-tuple=4, Mismatch Penalty=1, Joining Penalty=30, Randomization Group Length=0, and Cutoff Score=1, Gap Penalty=5, Gap Size Penalty 0.05, and Window Size=500 or query sequence length in nucleotide bases, whichever is shorter. Preferred parameters employed to calculate percent identity and similarity of an amino acid alignment are: Matrix=PAM 150, k-tuple=2, Mismatch Penalty=1, Joining Penalty=20, Randomization Group Length=0, Cutoff Score=1, Gap Penalty=5, Gap Size Penalty=0.05, and Window Size=500 or query sequence length in amino acid residues, whichever is shorter.

As an illustration, a polynucleotide having a nucleotide sequence of at least 95% "identity" to a sequence contained in SEQ ID NO:X or the cDNA contained in the deposited clone, means that the polynucleotide is identical to a sequence contained in SEQ ID NO:X or the cDNA except that the polynucleotide sequence may include up to five point mutations per each 100 nucleotides of the total length (not just within a given 100 nucleotide stretch). In other words, to obtain a polynucleotide having a nucleotide sequence at least 95% identical to SEQ ID NO:X or the deposited clone, up to 5% of the nucleotides in the sequence contained in SEQ ID NO:X or the cDNA can be deleted, inserted, or substituted with other nucleotides. These changes may occur anywhere throughout the polynucleotide.

Further embodiments of the present invention include polynucleotides having at least 85% identity, more preferably at least 90% identity, and most preferably at least 95%, 96%, 97%, 98% or 99% identity to a sequence contained in SEQ ID NO:X or the cDNA contained in the deposited clone. Of course, due to the degeneracy of the genetic code, one of ordinary skill in the art will immediately recognize that a large number of the polynucleotides having at least 85%, 90%, 95%, 96%, 97%, 98%, or 99% identity

will encode a polypeptide identical to an amino acid sequence contained in SEQ ID NO:Y or the expressed protein produced by the deposited clone.

Similarly, by a polypeptide having an amino acid sequence having at least, for example, 95% "identity" to a reference polypeptide, is intended that the amino acid
5 sequence of the polypeptide is identical to the reference polypeptide except that the polypeptide sequence may include up to five amino acid alterations per each 100 amino acids of the total length of the reference polypeptide. In other words, to obtain a polypeptide having an amino acid sequence at least 95% identical to a reference amino acid sequence, up to 5% of the amino acid residues in the reference sequence may be
10 deleted or substituted with another amino acid, or a number of amino acids up to 5% of the total amino acid residues in the reference sequence may be inserted into the reference sequence. These alterations of the reference sequence may occur at the amino or carboxy terminal positions of the reference amino acid sequence or anywhere between those terminal positions, interspersed either individually among residues in the
15 reference sequence or in one or more contiguous groups within the reference sequence.

Further embodiments of the present invention include polypeptides having at least 80% identity, more preferably at least 85% identity, more preferably at least 90% identity, and most preferably at least 95%, 96%, 97%, 98% or 99% identity to an amino acid sequence contained in SEQ ID NO:Y or the expressed protein produced by
20 the deposited clone. Preferably, the above polypeptides should exhibit at least one biological activity of the protein.

In a preferred embodiment, polypeptides of the present invention include polypeptides having at least 90% similarity, more preferably at least 95% similarity, and still more preferably at least 96%, 97%, 98%, or 99% similarity to an amino acid
25 sequence contained in SEQ ID NO:Y or the expressed protein produced by the deposited clone.

The variants may contain alterations in the coding regions, non-coding regions, or both. Especially preferred are polynucleotide variants containing alterations which produce silent substitutions, additions, or deletions, but do not alter the properties or
30 activities of the encoded polypeptide. Nucleotide variants produced by silent substitutions due to the degeneracy of the genetic code are preferred. Moreover, variants in which 5-10, 1-5, or 1-2 amino acids are substituted, deleted, or added in any combination are also preferred. Polynucleotide variants can be produced for a variety of reasons, e.g., to optimize codon expression for a particular host (change codons in
35 the human mRNA to those preferred by a bacterial host such as *E. coli*).

Naturally occurring variants are called "allelic variants," and refer to one of several alternate forms of a gene occupying a given locus on a chromosome of an

organism. (Genes II, Lewin, B., ed., John Wiley & Sons, New York (1985).) These allelic variants can vary at either the polynucleotide and/or polypeptide level. Alternatively, non-naturally occurring variants may be produced by mutagenesis techniques or by direct synthesis.

5 Using known methods of protein engineering and recombinant DNA technology, variants may be generated to improve or alter the characteristics of the polypeptides of the present invention. For instance, one or more amino acids can be deleted from the N-terminus or C-terminus of the secreted protein without substantial loss of biological function. The authors of Ron et al., J. Biol. Chem. 268: 2984-2988
10 (1993), reported variant KGF proteins having heparin binding activity even after deleting 3, 8, or 27 amino-terminal amino acid residues. Similarly, Interferon gamma exhibited up to ten times higher activity after deleting 8-10 amino acid residues from the carboxy terminus of this protein. (Dobeli et al., J. Biotechnology 7:199-216 (1988).)

15 Moreover, ample evidence demonstrates that variants often retain a biological activity similar to that of the naturally occurring protein. For example, Gayle and coworkers (J. Biol. Chem 268:22105-22111 (1993)) conducted extensive mutational analysis of human cytokine IL-1a. They used random mutagenesis to generate over 3,500 individual IL-1a mutants that averaged 2.5 amino acid changes per variant over the entire length of the molecule. Multiple mutations were examined at every possible
20 amino acid position. The investigators found that "[m]ost of the molecule could be altered with little effect on either [binding or biological activity]." (See, Abstract.) In fact, only 23 unique amino acid sequences, out of more than 3,500 nucleotide sequences examined, produced a protein that significantly differed in activity from wild-type.

25 Furthermore, even if deleting one or more amino acids from the N-terminus or C-terminus of a polypeptide results in modification or loss of one or more biological functions, other biological activities may still be retained. For example, the ability of a deletion variant to induce and/or to bind antibodies which recognize the secreted form will likely be retained when less than the majority of the residues of the secreted form
30 are removed from the N-terminus or C-terminus. Whether a particular polypeptide lacking N- or C-terminal residues of a protein retains such immunogenic activities can readily be determined by routine methods described herein and otherwise known in the art.

35 Thus, the invention further includes polypeptide variants which show substantial biological activity. Such variants include deletions, insertions, inversions, repeats, and substitutions selected according to general rules known in the art so as have little effect on activity. For example, guidance concerning how to make

phenotypically silent amino acid substitutions is provided in Bowie, J. U. et al., Science 247:1306-1310 (1990), wherein the authors indicate that there are two main strategies for studying the tolerance of an amino acid sequence to change.

The first strategy exploits the tolerance of amino acid substitutions by natural selection during the process of evolution. By comparing amino acid sequences in different species, conserved amino acids can be identified. These conserved amino acids are likely important for protein function. In contrast, the amino acid positions where substitutions have been tolerated by natural selection indicates that these positions are not critical for protein function. Thus, positions tolerating amino acid substitution could be modified while still maintaining biological activity of the protein.

The second strategy uses genetic engineering to introduce amino acid changes at specific positions of a cloned gene to identify regions critical for protein function. For example, site directed mutagenesis or alanine-scanning mutagenesis (introduction of single alanine mutations at every residue in the molecule) can be used. (Cunningham and Wells, Science 244:1081-1085 (1989).) The resulting mutant molecules can then be tested for biological activity.

As the authors state, these two strategies have revealed that proteins are surprisingly tolerant of amino acid substitutions. The authors further indicate which amino acid changes are likely to be permissive at certain amino acid positions in the protein. For example, most buried (within the tertiary structure of the protein) amino acid residues require nonpolar side chains, whereas few features of surface side chains are generally conserved. Moreover, tolerated conservative amino acid substitutions involve replacement of the aliphatic or hydrophobic amino acids Ala, Val, Leu and Ile; replacement of the hydroxyl residues Ser and Thr; replacement of the acidic residues Asp and Glu; replacement of the amide residues Asn and Gln, replacement of the basic residues Lys, Arg, and His; replacement of the aromatic residues Phe, Tyr, and Trp, and replacement of the small-sized amino acids Ala, Ser, Thr, Met, and Gly.

Besides conservative amino acid substitution, variants of the present invention include (i) substitutions with one or more of the non-conserved amino acid residues, where the substituted amino acid residues may or may not be one encoded by the genetic code, or (ii) substitution with one or more of amino acid residues having a substituent group, or (iii) fusion of the mature polypeptide with another compound, such as a compound to increase the stability and/or solubility of the polypeptide (for example, polyethylene glycol), or (iv) fusion of the polypeptide with additional amino acids, such as an IgG Fc fusion region peptide, or leader or secretory sequence, or a sequence facilitating purification. Such variant polypeptides are deemed to be within the scope of those skilled in the art from the teachings herein.

For example, polypeptide variants containing amino acid substitutions of charged amino acids with other charged or neutral amino acids may produce proteins with improved characteristics, such as less aggregation. Aggregation of pharmaceutical formulations both reduces activity and increases clearance due to the aggregate's immunogenic activity. (Pinckard et al., Clin. Exp. Immunol. 2:331-340 (1967); Robbins et al., Diabetes 36: 838-845 (1987); Cleland et al., Crit. Rev. Therapeutic Drug Carrier Systems 10:307-377 (1993).)

Polynucleotide and Polypeptide Fragments

In the present invention, a "polynucleotide fragment" refers to a short polynucleotide having a nucleic acid sequence contained in the deposited clone or shown in SEQ ID NO:X. The short nucleotide fragments are preferably at least about 15 nt, and more preferably at least about 20 nt, still more preferably at least about 30 nt, and even more preferably, at least about 40 nt in length. A fragment "at least 20 nt in length," for example, is intended to include 20 or more contiguous bases from the cDNA sequence contained in the deposited clone or the nucleotide sequence shown in SEQ ID NO:X. These nucleotide fragments are useful as diagnostic probes and primers as discussed herein. Of course, larger fragments (e.g., 50, 150, 500, 600, 2000 nucleotides) are preferred.

Moreover, representative examples of polynucleotide fragments of the invention, include, for example, fragments having a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500, 501-550, 551-600, 651-700, and 701 to the end of SEQ ID NO:X or the cDNA contained in the deposited clone. In this context "about" includes the particularly recited ranges, larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has biological activity.

In the present invention, a "polypeptide fragment" refers to a short amino acid sequence contained in SEQ ID NO:Y or encoded by the cDNA contained in the deposited clone. Protein fragments may be "free-standing," or comprised within a larger polypeptide of which the fragment forms a part or region, most preferably as a single continuous region. Representative examples of polypeptide fragments of the invention, include, for example, fragments from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 102-120, 121-140, 141-160, and 161 to the end of the coding region. Moreover, polypeptide fragments can be about 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, or 150 amino acids in length. In this context "about"

includes the particularly recited ranges, larger or smaller by several (5, 4, 3, 2, or 1) amino acids, at either extreme or at both extremes.

Preferred polypeptide fragments include the secreted protein as well as the mature form. Further preferred polypeptide fragments include the secreted protein or the mature form having a continuous series of deleted residues from the amino or the carboxy terminus, or both. For example, any number of amino acids, ranging from 1-60, can be deleted from the amino terminus of either the secreted polypeptide or the mature form. Similarly, any number of amino acids, ranging from 1-30, can be deleted from the carboxy terminus of the secreted protein or mature form. Furthermore, any combination of the above amino and carboxy terminus deletions are preferred. Similarly, polynucleotide fragments encoding these polypeptide fragments are also preferred.

Also preferred are polypeptide and polynucleotide fragments characterized by structural or functional domains, such as fragments that comprise alpha-helix and alpha-helix forming regions, beta-sheet and beta-sheet-forming regions, turn and turn-forming regions, coil and coil-forming regions, hydrophilic regions, hydrophobic regions, alpha amphipathic regions, beta amphipathic regions, flexible regions, surface-forming regions, substrate binding region, and high antigenic index regions. Polypeptide fragments of SEQ ID NO:Y falling within conserved domains are specifically contemplated by the present invention. Moreover, polynucleotide fragments encoding these domains are also contemplated.

Other preferred fragments are biologically active fragments. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of the polypeptide of the present invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

Epitopes & Antibodies

In the present invention, "epitopes" refer to polypeptide fragments having antigenic or immunogenic activity in an animal, especially in a human. A preferred embodiment of the present invention relates to a polypeptide fragment comprising an epitope, as well as the polynucleotide encoding this fragment. A region of a protein molecule to which an antibody can bind is defined as an "antigenic epitope." In contrast, an "immunogenic epitope" is defined as a part of a protein that elicits an antibody response. (See, for instance, Geysen et al., Proc. Natl. Acad. Sci. USA 81:3998- 4002 (1983).)

Fragments which function as epitopes may be produced by any conventional means. (See, e.g., Houghten, R. A., Proc. Natl. Acad. Sci. USA 82:5131-5135 (1985) further described in U.S. Patent No. 4,631,211.)

5 In the present invention, antigenic epitopes preferably contain a sequence of at least seven, more preferably at least nine, and most preferably between about 15 to about 30 amino acids. Antigenic epitopes are useful to raise antibodies, including monoclonal antibodies, that specifically bind the epitope. (See, for instance, Wilson et al., Cell 37:767-778 (1984); Sutcliffe, J. G. et al., Science 219:660-666 (1983).)

10 Similarly, immunogenic epitopes can be used to induce antibodies according to methods well known in the art. (See, for instance, Sutcliffe et al., supra; Wilson et al., supra; Chow, M. et al., Proc. Natl. Acad. Sci. USA 82:910-914; and Bittle, F. J. et al., J. Gen. Virol. 66:2347-2354 (1985).) A preferred immunogenic epitope includes the secreted protein. The immunogenic epitopes may be presented together with a carrier protein, such as an albumin, to an animal system (such as rabbit or mouse) or, if
15 it is long enough (at least about 25 amino acids), without a carrier. However, immunogenic epitopes comprising as few as 8 to 10 amino acids have been shown to be sufficient to raise antibodies capable of binding to, at the very least, linear epitopes in a denatured polypeptide (e.g., in Western blotting.)

As used herein, the term "antibody" (Ab) or "monoclonal antibody" (Mab) is
20 meant to include intact molecules as well as antibody fragments (such as, for example, Fab and F(ab')₂ fragments) which are capable of specifically binding to protein. Fab and F(ab')₂ fragments lack the Fc fragment of intact antibody, clear more rapidly from the circulation, and may have less non-specific tissue binding than an intact antibody. (Wahl et al., J. Nucl. Med. 24:316-325 (1983).) Thus, these fragments are preferred,
25 as well as the products of a FAB or other immunoglobulin expression library. Moreover, antibodies of the present invention include chimeric, single chain, and humanized antibodies.

Fusion Proteins

30 Any polypeptide of the present invention can be used to generate fusion proteins. For example, the polypeptide of the present invention, when fused to a second protein, can be used as an antigenic tag. Antibodies raised against the polypeptide of the present invention can be used to indirectly detect the second protein by binding to the polypeptide. Moreover, because secreted proteins target cellular
35 locations based on trafficking signals, the polypeptides of the present invention can be used as targeting molecules once fused to other proteins.

Examples of domains that can be fused to polypeptides of the present invention include not only heterologous signal sequences, but also other heterologous functional regions. The fusion does not necessarily need to be direct, but may occur through linker sequences.

5 Moreover, fusion proteins may also be engineered to improve characteristics of the polypeptide of the present invention. For instance, a region of additional amino acids, particularly charged amino acids, may be added to the N-terminus of the polypeptide to improve stability and persistence during purification from the host cell or subsequent handling and storage. Also, peptide moieties may be added to the
10 polypeptide to facilitate purification. Such regions may be removed prior to final preparation of the polypeptide. The addition of peptide moieties to facilitate handling of polypeptides are familiar and routine techniques in the art.

 Moreover, polypeptides of the present invention, including fragments, and specifically epitopes, can be combined with parts of the constant domain of
15 immunoglobulins (IgG), resulting in chimeric polypeptides. These fusion proteins facilitate purification and show an increased half-life in vivo. One reported example describes chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light chains of mammalian immunoglobulins. (EP A 394,827; Traunecker et al., Nature 331:84-86
20 (1988).) Fusion proteins having disulfide-linked dimeric structures (due to the IgG) can also be more efficient in binding and neutralizing other molecules, than the monomeric secreted protein or protein fragment alone. (Fountoulakis et al., J. Biochem. 270:3958-3964 (1995).)

 Similarly, EP-A-O 464 533 (Canadian counterpart 2045869) discloses fusion
25 proteins comprising various portions of constant region of immunoglobulin molecules together with another human protein or part thereof. In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties. (EP-A 0232 262.) Alternatively, deleting the Fc part after the fusion protein has been expressed, detected, and purified,
30 would be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. (See, D. Bennett et al., J. Molecular Recognition 8:52-58 (1995); K. Johanson et al., J. Biol.
35 Chem. 270:9459-9471 (1995).)

 Moreover, the polypeptides of the present invention can be fused to marker sequences, such as a peptide which facilitates purification of the fused polypeptide. In

preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth, CA, 91311), among others, many of which are commercially available. As described in Gentz et al., Proc. Natl. Acad. Sci. USA 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Another peptide tag useful for purification, the "HA" tag, corresponds to an epitope derived from the influenza hemagglutinin protein. (Wilson et al., Cell 37:767 (1984).)

Thus, any of these above fusions can be engineered using the polynucleotides or the polypeptides of the claimed invention.

Vectors, Host Cells, and Protein Production

The present invention also relates to vectors containing the polynucleotide of the present invention, host cells, and the production of polypeptides by recombinant techniques. The vector may be, for example, a phage, plasmid, viral, or retroviral vector. Retroviral vectors may be replication competent or replication defective. In the latter case, viral propagation generally will occur only in complementing host cells.

The polynucleotides may be joined to a vector containing a selectable marker for propagation in a host. Generally, a plasmid vector is introduced in a precipitate, such as a calcium phosphate precipitate, or in a complex with a charged lipid. If the vector is a virus, it may be packaged in vitro using an appropriate packaging cell line and then transduced into host cells.

The polynucleotide insert should be operatively linked to an appropriate promoter, such as the phage lambda PL promoter, the E. coli lac, trp, phoA and tac promoters, the SV40 early and late promoters and promoters of retroviral LTRs, to name a few. Other suitable promoters will be known to the skilled artisan. The expression constructs will further contain sites for transcription initiation, termination, and, in the transcribed region, a ribosome binding site for translation. The coding portion of the transcripts expressed by the constructs will preferably include a translation initiating codon at the beginning and a termination codon (UAA, UGA or UAG) appropriately positioned at the end of the polypeptide to be translated.

As indicated, the expression vectors will preferably include at least one selectable marker. Such markers include dihydrofolate reductase, G418 or neomycin resistance for eukaryotic cell culture and tetracycline, kanamycin or ampicillin resistance genes for culturing in E. coli and other bacteria. Representative examples of appropriate hosts include, but are not limited to, bacterial cells, such as E. coli, Streptomyces and Salmonella typhimurium cells; fungal cells, such as yeast cells; insect cells such as Drosophila S2 and Spodoptera Sf9 cells; animal cells such as CHO, COS,

293, and Bowes melanoma cells; and plant cells. Appropriate culture mediums and conditions for the above-described host cells are known in the art.

Among vectors preferred for use in bacteria include pQE70, pQE60 and pQE-9, available from QIAGEN, Inc.; pBluescript vectors, Phagescript vectors, pNH8A, pNH16a, pNH18A, pNH46A, available from Stratagene Cloning Systems, Inc.; and ptrc99a, pKK223-3, pKK233-3, pDR540, pRIT5 available from Pharmacia Biotech, Inc. Among preferred eukaryotic vectors are pWLNEO, pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; and pSVK3, pBPV, pMSG and pSVL available from Pharmacia. Other suitable vectors will be readily apparent to the skilled artisan.

Introduction of the construct into the host cell can be effected by calcium phosphate transfection, DEAE-dextran mediated transfection, cationic lipid-mediated transfection, electroporation, transduction, infection, or other methods. Such methods are described in many standard laboratory manuals, such as Davis et al., Basic Methods In Molecular Biology (1986). It is specifically contemplated that the polypeptides of the present invention may in fact be expressed by a host cell lacking a recombinant vector.

A polypeptide of this invention can be recovered and purified from recombinant cell cultures by well-known methods including ammonium sulfate or ethanol precipitation, acid extraction, anion or cation exchange chromatography, phosphocellulose chromatography, hydrophobic interaction chromatography, affinity chromatography, hydroxylapatite chromatography and lectin chromatography. Most preferably, high performance liquid chromatography ("HPLC") is employed for purification.

Polypeptides of the present invention, and preferably the secreted form, can also be recovered from: products purified from natural sources, including bodily fluids, tissues and cells, whether directly isolated or cultured; products of chemical synthetic procedures; and products produced by recombinant techniques from a prokaryotic or eukaryotic host, including, for example, bacterial, yeast, higher plant, insect, and mammalian cells. Depending upon the host employed in a recombinant production procedure, the polypeptides of the present invention may be glycosylated or may be non-glycosylated. In addition, polypeptides of the invention may also include an initial modified methionine residue, in some cases as a result of host-mediated processes. Thus, it is well known in the art that the N-terminal methionine encoded by the translation initiation codon generally is removed with high efficiency from any protein after translation in all eukaryotic cells. While the N-terminal methionine on most proteins also is efficiently removed in most prokaryotes, for some proteins, this prokaryotic removal process is inefficient, depending on the nature of the amino acid to which the N-terminal methionine is covalently linked.

Uses of the Polynucleotides

Each of the polynucleotides identified herein can be used in numerous ways as reagents. The following description should be considered exemplary and utilizes
5 known techniques.

The polynucleotides of the present invention are useful for chromosome identification. There exists an ongoing need to identify new chromosome markers, since few chromosome marking reagents, based on actual sequence data (repeat polymorphisms), are presently available. Each polynucleotide of the present invention
10 can be used as a chromosome marker.

Briefly, sequences can be mapped to chromosomes by preparing PCR primers (preferably 15-25 bp) from the sequences shown in SEQ ID NO:X. Primers can be selected using computer analysis so that primers do not span more than one predicted exon in the genomic DNA. These primers are then used for PCR screening of somatic
15 cell hybrids containing individual human chromosomes. Only those hybrids containing the human gene corresponding to the SEQ ID NO:X will yield an amplified fragment.

Similarly, somatic hybrids provide a rapid method of PCR mapping the polynucleotides to particular chromosomes. Three or more clones can be assigned per day using a single thermal cycler. Moreover, sublocalization of the polynucleotides can
20 be achieved with panels of specific chromosome fragments. Other gene mapping strategies that can be used include in situ hybridization, prescreening with labeled flow-sorted chromosomes, and preselection by hybridization to construct chromosome specific-cDNA libraries.

Precise chromosomal location of the polynucleotides can also be achieved using
25 fluorescence in situ hybridization (FISH) of a metaphase chromosomal spread. This technique uses polynucleotides as short as 500 or 600 bases; however, polynucleotides 2,000-4,000 bp are preferred. For a review of this technique, see Verma et al., "Human Chromosomes: a Manual of Basic Techniques," Pergamon Press, New York (1988).

For chromosome mapping, the polynucleotides can be used individually (to
30 mark a single chromosome or a single site on that chromosome) or in panels (for marking multiple sites and/or multiple chromosomes). Preferred polynucleotides correspond to the noncoding regions of the cDNAs because the coding sequences are more likely conserved within gene families, thus increasing the chance of cross
35 hybridization during chromosomal mapping.

Once a polynucleotide has been mapped to a precise chromosomal location, the physical position of the polynucleotide can be used in linkage analysis. Linkage

analysis establishes coinheritance between a chromosomal location and presentation of a particular disease. (Disease mapping data are found, for example, in V. McKusick, Mendelian Inheritance in Man (available on line through Johns Hopkins University Welch Medical Library) .) Assuming 1 megabase mapping resolution and one gene per 20 kb, a cDNA precisely localized to a chromosomal region associated with the disease could be one of 50-500 potential causative genes.

Thus, once coinheritance is established, differences in the polynucleotide and the corresponding gene between affected and unaffected individuals can be examined. First, visible structural alterations in the chromosomes, such as deletions or translocations, are examined in chromosome spreads or by PCR. If no structural alterations exist, the presence of point mutations are ascertained. Mutations observed in some or all affected individuals, but not in normal individuals, indicates that the mutation may cause the disease. However, complete sequencing of the polypeptide and the corresponding gene from several normal individuals is required to distinguish the mutation from a polymorphism. If a new polymorphism is identified, this polymorphic polypeptide can be used for further linkage analysis.

Furthermore, increased or decreased expression of the gene in affected individuals as compared to unaffected individuals can be assessed using polynucleotides of the present invention. Any of these alterations (altered expression, chromosomal rearrangement, or mutation) can be used as a diagnostic or prognostic marker.

In addition to the foregoing, a polynucleotide can be used to control gene expression through triple helix formation or antisense DNA or RNA. Both methods rely on binding of the polynucleotide to DNA or RNA. For these techniques, preferred polynucleotides are usually 20 to 40 bases in length and complementary to either the region of the gene involved in transcription (triple helix - see Lee et al., Nucl. Acids Res. 6:3073 (1979); Cooney et al., Science 241:456 (1988); and Dervan et al., Science 251:1360 (1991)) or to the mRNA itself (antisense - Okano, J. Neurochem. 56:560 (1991); Oligodeoxy-nucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988).) Triple helix formation optimally results in a shut-off of RNA transcription from DNA, while antisense RNA hybridization blocks translation of an mRNA molecule into polypeptide. Both techniques are effective in model systems, and the information disclosed herein can be used to design antisense or triple helix polynucleotides in an effort to treat disease.

Polynucleotides of the present invention are also useful in gene therapy. One goal of gene therapy is to insert a normal gene into an organism having a defective gene, in an effort to correct the genetic defect. The polynucleotides disclosed in the

present invention offer a means of targeting such genetic defects in a highly accurate manner. Another goal is to insert a new gene that was not present in the host genome, thereby producing a new trait in the host cell.

The polynucleotides are also useful for identifying individuals from minute
5 biological samples. The United States military, for example, is considering the use of restriction fragment length polymorphism (RFLP) for identification of its personnel. In this technique, an individual's genomic DNA is digested with one or more restriction enzymes, and probed on a Southern blot to yield unique bands for identifying personnel. This method does not suffer from the current limitations of "Dog Tags"
10 which can be lost, switched, or stolen, making positive identification difficult. The polynucleotides of the present invention can be used as additional DNA markers for RFLP.

The polynucleotides of the present invention can also be used as an alternative to RFLP, by determining the actual base-by-base DNA sequence of selected portions of an
15 individual's genome. These sequences can be used to prepare PCR primers for amplifying and isolating such selected DNA, which can then be sequenced. Using this technique, individuals can be identified because each individual will have a unique set of DNA sequences. Once a unique ID database is established for an individual, positive identification of that individual, living or dead, can be made from extremely
20 small tissue samples.

Forensic biology also benefits from using DNA-based identification techniques as disclosed herein. DNA sequences taken from very small biological samples such as tissues, e.g., hair or skin, or body fluids, e.g., blood, saliva, semen, etc., can be amplified using PCR. In one prior art technique, gene sequences amplified from
25 polymorphic loci, such as DQa class II HLA gene, are used in forensic biology to identify individuals. (Erlich, H., PCR Technology, Freeman and Co. (1992).) Once these specific polymorphic loci are amplified, they are digested with one or more restriction enzymes, yielding an identifying set of bands on a Southern blot probed with DNA corresponding to the DQa class II HLA gene. Similarly, polynucleotides of the
30 present invention can be used as polymorphic markers for forensic purposes.

There is also a need for reagents capable of identifying the source of a particular tissue. Such need arises, for example, in forensics when presented with tissue of unknown origin. Appropriate reagents can comprise, for example, DNA probes or primers specific to particular tissue prepared from the sequences of the present
35 invention. Panels of such reagents can identify tissue by species and/or by organ type. In a similar fashion, these reagents can be used to screen tissue cultures for contamination.

In the very least, the polynucleotides of the present invention can be used as molecular weight markers on Southern gels, as diagnostic probes for the presence of a specific mRNA in a particular cell type, as a probe to "subtract-out" known sequences in the process of discovering novel polynucleotides, for selecting and making oligomers for attachment to a "gene chip" or other support, to raise anti-DNA antibodies using DNA immunization techniques, and as an antigen to elicit an immune response.

Uses of the Polypeptides

Each of the polypeptides identified herein can be used in numerous ways. The following description should be considered exemplary and utilizes known techniques.

A polypeptide of the present invention can be used to assay protein levels in a biological sample using antibody-based techniques. For example, protein expression in tissues can be studied with classical immunohistological methods. (Jalkanen, M., et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, M., et al., J. Cell. Biol. 105:3087-3096 (1987).) Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase, and radioisotopes, such as iodine (^{125}I , ^{121}I), carbon (^{14}C), sulfur (^{35}S), tritium (^3H), indium (^{112}In), and technetium ($^{99\text{m}}\text{Tc}$), and fluorescent labels, such as fluorescein and rhodamine, and biotin.

In addition to assaying secreted protein levels in a biological sample, proteins can also be detected in vivo by imaging. Antibody labels or markers for in vivo imaging of protein include those detectable by X-radiography, NMR or ESR. For X-radiography, suitable labels include radioisotopes such as barium or cesium, which emit detectable radiation but are not overtly harmful to the subject. Suitable markers for NMR and ESR include those with a detectable characteristic spin, such as deuterium, which may be incorporated into the antibody by labeling of nutrients for the relevant hybridoma.

A protein-specific antibody or antibody fragment which has been labeled with an appropriate detectable imaging moiety, such as a radioisotope (for example, ^{131}I , ^{112}In , $^{99\text{m}}\text{Tc}$), a radio-opaque substance, or a material detectable by nuclear magnetic resonance, is introduced (for example, parenterally, subcutaneously, or intraperitoneally) into the mammal. It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20

millicuries of ^{99m}Tc . The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which contain the specific protein. In vivo tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments." (Chapter 13 in Tumor Imaging: The Radiochemical Detection of Cancer, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982).)

Thus, the invention provides a diagnostic method of a disorder, which involves (a) assaying the expression of a polypeptide of the present invention in cells or body fluid of an individual; (b) comparing the level of gene expression with a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of a disorder.

Moreover, polypeptides of the present invention can be used to treat disease. For example, patients can be administered a polypeptide of the present invention in an effort to replace absent or decreased levels of the polypeptide (e.g., insulin), to supplement absent or decreased levels of a different polypeptide (e.g., hemoglobin S for hemoglobin B), to inhibit the activity of a polypeptide (e.g., an oncogene), to activate the activity of a polypeptide (e.g., by binding to a receptor), to reduce the activity of a membrane bound receptor by competing with it for free ligand (e.g., soluble TNF receptors used in reducing inflammation), or to bring about a desired response (e.g., blood vessel growth).

Similarly, antibodies directed to a polypeptide of the present invention can also be used to treat disease. For example, administration of an antibody directed to a polypeptide of the present invention can bind and reduce overproduction of the polypeptide. Similarly, administration of an antibody can activate the polypeptide, such as by binding to a polypeptide bound to a membrane (receptor).

At the very least, the polypeptides of the present invention could be used as molecular weight markers on SDS-PAGE gels or on molecular sieve gel filtration columns using methods well known to those of skill in the art. Polypeptides can also be used to raise antibodies, which in turn are used to measure protein expression from a recombinant cell, as a way of assessing transformation of the host cell. Moreover, the polypeptides of the present invention can be used to test the following biological activities.

Biological Activities

The polynucleotides and polypeptides of the present invention can be used in assays to test for one or more biological activities. If these polynucleotides and polypeptides do exhibit activity in a particular assay, it is likely that these molecules

may be involved in the diseases associated with the biological activity. Thus, the polynucleotides and polypeptides could be used to treat the associated disease.

Immune Activity

5 A polypeptide or polynucleotide of the present invention may be useful in treating deficiencies or disorders of the immune system, by activating or inhibiting the proliferation, differentiation, or mobilization (chemotaxis) of immune cells. Immune cells develop through a process called hematopoiesis, producing myeloid (platelets, red blood cells, neutrophils, and macrophages) and lymphoid (B and T lymphocytes) cells
10 from pluripotent stem cells. The etiology of these immune deficiencies or disorders may be genetic, somatic, such as cancer or some autoimmune disorders, acquired (e.g., by chemotherapy or toxins), or infectious. Moreover, a polynucleotide or polypeptide of the present invention can be used as a marker or detector of a particular immune system disease or disorder.

15 A polynucleotide or polypeptide of the present invention may be useful in treating or detecting deficiencies or disorders of hematopoietic cells. A polypeptide or polynucleotide of the present invention could be used to increase differentiation and proliferation of hematopoietic cells, including the pluripotent stem cells, in an effort to treat those disorders associated with a decrease in certain (or many) types hematopoietic
20 cells. Examples of immunologic deficiency syndromes include, but are not limited to: blood protein disorders (e.g. agammaglobulinemia, dysgammaglobulinemia), ataxia telangiectasia, common variable immunodeficiency, Digeorge Syndrome, HIV infection, HTLV-BLV infection, leukocyte adhesion deficiency syndrome, lymphopenia, phagocyte bactericidal dysfunction, severe combined immunodeficiency
25 (SCIDs), Wiskott-Aldrich Disorder, anemia, thrombocytopenia, or hemoglobinuria.

Moreover, a polypeptide or polynucleotide of the present invention could also be used to modulate hemostatic (the stopping of bleeding) or thrombolytic activity (clot formation). For example, by increasing hemostatic or thrombolytic activity, a polynucleotide or polypeptide of the present invention could be used to treat blood
30 coagulation disorders (e.g., afibrinogenemia, factor deficiencies), blood platelet disorders (e.g. thrombocytopenia), or wounds resulting from trauma, surgery, or other causes. Alternatively, a polynucleotide or polypeptide of the present invention that can decrease hemostatic or thrombolytic activity could be used to inhibit or dissolve clotting. These molecules could be important in the treatment of heart attacks
35 (infarction), strokes, or scarring.

A polynucleotide or polypeptide of the present invention may also be useful in treating or detecting autoimmune disorders. Many autoimmune disorders result from

inappropriate recognition of self as foreign material by immune cells. This inappropriate recognition results in an immune response leading to the destruction of the host tissue. Therefore, the administration of a polypeptide or polynucleotide of the present invention that inhibits an immune response, particularly the proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing autoimmune disorders.

Examples of autoimmune disorders that can be treated or detected by the present invention include, but are not limited to: Addison's Disease, hemolytic anemia, antiphospholipid syndrome, rheumatoid arthritis, dermatitis, allergic encephalomyelitis, glomerulonephritis, Goodpasture's Syndrome, Graves' Disease, Multiple Sclerosis, Myasthenia Gravis, Neuritis, Ophthalmia, Bullous Pemphigoid, Pemphigus, Polyendocrinopathies, Purpura, Reiter's Disease, Stiff-Man Syndrome, Autoimmune Thyroiditis, Systemic Lupus Erythematosus, Autoimmune Pulmonary Inflammation, Guillain-Barre Syndrome, insulin dependent diabetes mellitus, and autoimmune inflammatory eye disease.

Similarly, allergic reactions and conditions, such as asthma (particularly allergic asthma) or other respiratory problems, may also be treated by a polypeptide or polynucleotide of the present invention. Moreover, these molecules can be used to treat anaphylaxis, hypersensitivity to an antigenic molecule, or blood group incompatibility.

A polynucleotide or polypeptide of the present invention may also be used to treat and/or prevent organ rejection or graft-versus-host disease (GVHD). Organ rejection occurs by host immune cell destruction of the transplanted tissue through an immune response. Similarly, an immune response is also involved in GVHD, but, in this case, the foreign transplanted immune cells destroy the host tissues. The administration of a polypeptide or polynucleotide of the present invention that inhibits an immune response, particularly the proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing organ rejection or GVHD.

Similarly, a polypeptide or polynucleotide of the present invention may also be used to modulate inflammation. For example, the polypeptide or polynucleotide may inhibit the proliferation and differentiation of cells involved in an inflammatory response. These molecules can be used to treat inflammatory conditions, both chronic and acute conditions, including inflammation associated with infection (e.g., septic shock, sepsis, or systemic inflammatory response syndrome (SIRS)), ischemia-reperfusion injury, endotoxin lethality, arthritis, complement-mediated hyperacute rejection, nephritis, cytokine or chemokine induced lung injury, inflammatory bowel disease, Crohn's disease, or resulting from over production of cytokines (e.g., TNF or IL-1.)

Hyperproliferative Disorders

A polypeptide or polynucleotide can be used to treat or detect hyperproliferative disorders, including neoplasms. A polypeptide or polynucleotide of the present invention may inhibit the proliferation of the disorder through direct or indirect interactions. Alternatively, a polypeptide or polynucleotide of the present invention may proliferate other cells which can inhibit the hyperproliferative disorder.

For example, by increasing an immune response, particularly increasing antigenic qualities of the hyperproliferative disorder or by proliferating, differentiating, or mobilizing T-cells, hyperproliferative disorders can be treated. This immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, decreasing an immune response may also be a method of treating hyperproliferative disorders, such as a chemotherapeutic agent.

Examples of hyperproliferative disorders that can be treated or detected by a polynucleotide or polypeptide of the present invention include, but are not limited to neoplasms located in the: abdomen, bone, breast, digestive system, liver, pancreas, peritoneum, endocrine glands (adrenal, parathyroid, pituitary, testicles, ovary, thymus, thyroid), eye, head and neck, nervous (central and peripheral), lymphatic system, pelvic, skin, soft tissue, spleen, thoracic, and urogenital.

Similarly, other hyperproliferative disorders can also be treated or detected by a polynucleotide or polypeptide of the present invention. Examples of such hyperproliferative disorders include, but are not limited to: hypergammaglobulinemia, lymphoproliferative disorders, paraproteinemias, purpura, sarcoidosis, Sezary Syndrome, Waldenstrom's Macroglobulinemia, Gaucher's Disease, histiocytosis, and any other hyperproliferative disease, besides neoplasia, located in an organ system listed above.

Infectious Disease

A polypeptide or polynucleotide of the present invention can be used to treat or detect infectious agents. For example, by increasing the immune response, particularly increasing the proliferation and differentiation of B and/or T cells, infectious diseases may be treated. The immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, the polypeptide or polynucleotide of the present invention may also directly inhibit the infectious agent, without necessarily eliciting an immune response.

- Viruses are one example of an infectious agent that can cause disease or symptoms that can be treated or detected by a polynucleotide or polypeptide of the present invention. Examples of viruses, include, but are not limited to the following DNA and RNA viral families: Arbovirus, Adenoviridae, Arenaviridae, Arterivirus, Bimaviridae, Bunyaviridae, Caliciviridae, Circoviridae, Coronaviridae, Flaviviridae, Hepadnaviridae (Hepatitis), Herpesviridae (such as, Cytomegalovirus, Herpes Simplex, Herpes Zoster), Mononegavirus (e.g., Paramyxoviridae, Morbillivirus, Rhabdoviridae), Orthomyxoviridae (e.g., Influenza), Papovaviridae, Parvoviridae, Picornaviridae, Poxviridae (such as Smallpox or Vaccinia), Reoviridae (e.g., Rotavirus), Retroviridae (HTLV-I, HTLV-II, Lentivirus), and Togaviridae (e.g., Rubivirus). Viruses falling within these families can cause a variety of diseases or symptoms, including, but not limited to: arthritis, bronchiollitis, encephalitis, eye infections (e.g., conjunctivitis, keratitis), chronic fatigue syndrome, hepatitis (A, B, C, E, Chronic Active, Delta), meningitis, opportunistic infections (e.g., AIDS), pneumonia, Burkitt's Lymphoma, chickenpox, hemorrhagic fever, Measles, Mumps, Parainfluenza, Rabies, the common cold, Polio, leukemia, Rubella, sexually transmitted diseases, skin diseases (e.g., Kaposi's, warts), and viremia. A polypeptide or polynucleotide of the present invention can be used to treat or detect any of these symptoms or diseases.
- Similarly, bacterial or fungal agents that can cause disease or symptoms and that can be treated or detected by a polynucleotide or polypeptide of the present invention include, but are not limited to, the following Gram-Negative and Gram-positive bacterial families and fungi: Actinomycetales (e.g., Corynebacterium, Mycobacterium, Norcardia), Aspergillosis, Bacillaceae (e.g., Anthrax, Clostridium), Bacteroidaceae, Blastomycosis, Bordetella, Borrelia, Brucellosis, Candidiasis, Campylobacter, Coccidioidomycosis, Cryptococcosis, Dermatocycoses, Enterobacteriaceae (Klebsiella, Salmonella, Serratia, Yersinia), Erysipelothrix, Helicobacter, Legionellosis, Leptospirosis, Listeria, Mycoplasmatales, Neisseriaceae (e.g., Acinetobacter, Gonorrhea, Meningococcal), Pasteurellaceae Infections (e.g., Actinobacillus, Heamophilus, Pasteurella), Pseudomonas, Rickettsiaceae, Chlamydiaceae, Syphilis, and Staphylococcal. These bacterial or fungal families can cause the following diseases or symptoms, including, but not limited to: bacteremia, endocarditis, eye infections (conjunctivitis, tuberculosis, uveitis), gingivitis, opportunistic infections (e.g., AIDS related infections), paronychia, prosthesis-related infections, Reiter's Disease, respiratory tract infections, such as Whooping Cough or Empyema, sepsis, Lyme Disease, Cat-Scratch Disease, Dysentery, Paratyphoid Fever, food poisoning, Typhoid, pneumonia, Gonorrhea, meningitis, Chlamydia, Syphilis, Diphtheria,

Leprosy, Paratuberculosis, Tuberculosis, Lupus, Botulism, gangrene, tetanus, impetigo, Rheumatic Fever, Scarlet Fever, sexually transmitted diseases, skin diseases (e.g., cellulitis, dermatocycoses), toxemia, urinary tract infections, wound infections. A polypeptide or polynucleotide of the present invention can be used to treat or detect any of these symptoms or diseases.

Moreover, parasitic agents causing disease or symptoms that can be treated or detected by a polynucleotide or polypeptide of the present invention include, but not limited to, the following families: Amebiasis, Babesiosis, Coccidiosis, Cryptosporidiosis, Dientamoebiasis, Dourine, Ectoparasitic, Giardiasis, Helminthiasis, Leishmaniasis, Theileriasis, Toxoplasmosis, Trypanosomiasis, and Trichomonas. These parasites can cause a variety of diseases or symptoms, including, but not limited to: Scabies, Trombiculiasis, eye infections, intestinal disease (e.g., dysentery, giardiasis), liver disease, lung disease, opportunistic infections (e.g., AIDS related), Malaria, pregnancy complications, and toxoplasmosis. A polypeptide or polynucleotide of the present invention can be used to treat or detect any of these symptoms or diseases.

Preferably, treatment using a polypeptide or polynucleotide of the present invention could either be by administering an effective amount of a polypeptide to the patient, or by removing cells from the patient, supplying the cells with a polynucleotide of the present invention, and returning the engineered cells to the patient (ex vivo therapy). Moreover, the polypeptide or polynucleotide of the present invention can be used as an antigen in a vaccine to raise an immune response against infectious disease.

Regeneration

A polynucleotide or polypeptide of the present invention can be used to differentiate, proliferate, and attract cells, leading to the regeneration of tissues. (See, Science 276:59-87 (1997).) The regeneration of tissues could be used to repair, replace, or protect tissue damaged by congenital defects, trauma (wounds, burns, incisions, or ulcers), age, disease (e.g. osteoporosis, osteoarthritis, periodontal disease, liver failure), surgery, including cosmetic plastic surgery, fibrosis, reperfusion injury, or systemic cytokine damage.

Tissues that could be regenerated using the present invention include organs (e.g., pancreas, liver, intestine, kidney, skin, endothelium), muscle (smooth, skeletal or cardiac), vascular (including vascular endothelium), nervous, hematopoietic, and skeletal (bone, cartilage, tendon, and ligament) tissue. Preferably, regeneration occurs without or decreased scarring. Regeneration also may include angiogenesis.

Moreover, a polynucleotide or polypeptide of the present invention may increase regeneration of tissues difficult to heal. For example, increased tendon/ligament regeneration would quicken recovery time after damage. A polynucleotide or polypeptide of the present invention could also be used prophylactically in an effort to avoid damage. Specific diseases that could be treated include of tendinitis, carpal tunnel syndrome, and other tendon or ligament defects. A further example of tissue regeneration of non-healing wounds includes pressure ulcers, ulcers associated with vascular insufficiency, surgical, and traumatic wounds.

Similarly, nerve and brain tissue could also be regenerated by using a polynucleotide or polypeptide of the present invention to proliferate and differentiate nerve cells. Diseases that could be treated using this method include central and peripheral nervous system diseases, neuropathies, or mechanical and traumatic disorders (e.g., spinal cord disorders, head trauma, cerebrovascular disease, and stroke). Specifically, diseases associated with peripheral nerve injuries, peripheral neuropathy (e.g., resulting from chemotherapy or other medical therapies), localized neuropathies, and central nervous system diseases (e.g., Alzheimer's disease, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis, and Shy-Drager syndrome), could all be treated using the polynucleotide or polypeptide of the present invention.

Chemotaxis

A polynucleotide or polypeptide of the present invention may have chemotaxis activity. A chemotactic molecule attracts or mobilizes cells (e.g., monocytes, fibroblasts, neutrophils, T-cells, mast cells, eosinophils, epithelial and/or endothelial cells) to a particular site in the body, such as inflammation, infection, or site of hyperproliferation. The mobilized cells can then fight off and/or heal the particular trauma or abnormality.

A polynucleotide or polypeptide of the present invention may increase chemotactic activity of particular cells. These chemotactic molecules can then be used to treat inflammation, infection, hyperproliferative disorders, or any immune system disorder by increasing the number of cells targeted to a particular location in the body. For example, chemotactic molecules can be used to treat wounds and other trauma to tissues by attracting immune cells to the injured location. Chemotactic molecules of the present invention can also attract fibroblasts, which can be used to treat wounds.

It is also contemplated that a polynucleotide or polypeptide of the present invention may inhibit chemotactic activity. These molecules could also be used to treat

disorders. Thus, a polynucleotide or polypeptide of the present invention could be used as an inhibitor of chemotaxis.

Binding Activity

5 A polypeptide of the present invention may be used to screen for molecules that bind to the polypeptide or for molecules to which the polypeptide binds. The binding of the polypeptide and the molecule may activate (agonist), increase, inhibit (antagonist), or decrease activity of the polypeptide or the molecule bound. Examples of such molecules include antibodies, oligonucleotides, proteins (e.g., receptors), or
10 small molecules.

 Preferably, the molecule is closely related to the natural ligand of the polypeptide, e.g., a fragment of the ligand, or a natural substrate, a ligand, a structural or functional mimetic. (See, Coligan et al., Current Protocols in Immunology 1(2):Chapter 5 (1991).) Similarly, the molecule can be closely related to the natural
15 receptor to which the polypeptide binds, or at least, a fragment of the receptor capable of being bound by the polypeptide (e.g., active site). In either case, the molecule can be rationally designed using known techniques.

 Preferably, the screening for these molecules involves producing appropriate cells which express the polypeptide, either as a secreted protein or on the cell
20 membrane. Preferred cells include cells from mammals, yeast, *Drosophila*, or *E. coli*. Cells expressing the polypeptide (or cell membrane containing the expressed polypeptide) are then preferably contacted with a test compound potentially containing the molecule to observe binding, stimulation, or inhibition of activity of either the polypeptide or the molecule.

25 The assay may simply test binding of a candidate compound to the polypeptide, wherein binding is detected by a label, or in an assay involving competition with a labeled competitor. Further, the assay may test whether the candidate compound results in a signal generated by binding to the polypeptide.

 Alternatively, the assay can be carried out using cell-free preparations,
30 polypeptide/molecule affixed to a solid support, chemical libraries, or natural product mixtures. The assay may also simply comprise the steps of mixing a candidate compound with a solution containing a polypeptide, measuring polypeptide/molecule activity or binding, and comparing the polypeptide/molecule activity or binding to a standard.

35 Preferably, an ELISA assay can measure polypeptide level or activity in a sample (e.g., biological sample) using a monoclonal or polyclonal antibody. The

antibody can measure polypeptide level or activity by either binding, directly or indirectly, to the polypeptide or by competing with the polypeptide for a substrate.

All of these above assays can be used as diagnostic or prognostic markers. The molecules discovered using these assays can be used to treat disease or to bring about a particular result in a patient (e.g., blood vessel growth) by activating or inhibiting the polypeptide/molecule. Moreover, the assays can discover agents which may inhibit or enhance the production of the polypeptide from suitably manipulated cells or tissues.

Therefore, the invention includes a method of identifying compounds which bind to a polypeptide of the invention comprising the steps of: (a) incubating a candidate binding compound with a polypeptide of the invention; and (b) determining if binding has occurred. Moreover, the invention includes a method of identifying agonists/antagonists comprising the steps of: (a) incubating a candidate compound with a polypeptide of the invention, (b) assaying a biological activity, and (b) determining if a biological activity of the polypeptide has been altered.

Other Activities

A polypeptide or polynucleotide of the present invention may also increase or decrease the differentiation or proliferation of embryonic stem cells, besides, as discussed above, hematopoietic lineage.

A polypeptide or polynucleotide of the present invention may also be used to modulate mammalian characteristics, such as body height, weight, hair color, eye color, skin, percentage of adipose tissue, pigmentation, size, and shape (e.g., cosmetic surgery). Similarly, a polypeptide or polynucleotide of the present invention may be used to modulate mammalian metabolism affecting catabolism, anabolism, processing, utilization, and storage of energy.

A polypeptide or polynucleotide of the present invention may be used to change a mammal's mental state or physical state by influencing biorhythms, circadian rhythms, depression (including depressive disorders), tendency for violence, tolerance for pain, reproductive capabilities (preferably by Activin or Inhibin-like activity), hormonal or endocrine levels, appetite, libido, memory, stress, or other cognitive qualities.

A polypeptide or polynucleotide of the present invention may also be used as a food additive or preservative, such as to increase or decrease storage capabilities, fat content, lipid, protein, carbohydrate, vitamins, minerals, cofactors or other nutritional components.

Other Preferred Embodiments

Other preferred embodiments of the claimed invention include an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 50 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X wherein X is any integer as defined in Table 1.

Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of SEQ ID NO:X in the range of positions beginning with the nucleotide at about the position of the 5' Nucleotide of the Clone Sequence and ending with the nucleotide at about the position of the 3' Nucleotide of the Clone Sequence as defined for SEQ ID NO:X in Table 1.

Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of SEQ ID NO:X in the range of positions beginning with the nucleotide at about the position of the 5' Nucleotide of the Start Codon and ending with the nucleotide at about the position of the 3' Nucleotide of the Clone Sequence as defined for SEQ ID NO:X in Table 1.

Similarly preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of SEQ ID NO:X in the range of positions beginning with the nucleotide at about the position of the 5' Nucleotide of the First Amino Acid of the Signal Peptide and ending with the nucleotide at about the position of the 3' Nucleotide of the Clone Sequence as defined for SEQ ID NO:X in Table 1.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 150 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X.

Further preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 500 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X.

A further preferred embodiment is a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of SEQ ID NO:X beginning with the nucleotide at about the position of the 5' Nucleotide of the First Amino Acid of the Signal Peptide and ending with the nucleotide at about the position of the 3' Nucleotide of the Clone Sequence as defined for SEQ ID NO:X in Table 1.

A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence of SEQ ID NO:X.

Also preferred is an isolated nucleic acid molecule which hybridizes under stringent hybridization conditions to a nucleic acid molecule, wherein said nucleic acid molecule which hybridizes does not hybridize under stringent hybridization conditions to a nucleic acid molecule having a nucleotide sequence consisting of only A residues or of only T residues.

Also preferred is a composition of matter comprising a DNA molecule which comprises a human cDNA clone identified by a cDNA Clone Identifier in Table 1, which DNA molecule is contained in the material deposited with the American Type Culture Collection and given the ATCC Deposit Number shown in Table 1 for said cDNA Clone Identifier.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides in the nucleotide sequence of a human cDNA clone identified by a cDNA Clone Identifier in Table 1, which DNA molecule is contained in the deposit given the ATCC Deposit Number shown in Table 1.

Also preferred is an isolated nucleic acid molecule, wherein said sequence of at least 50 contiguous nucleotides is included in the nucleotide sequence of the complete open reading frame sequence encoded by said human cDNA clone.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 150 contiguous nucleotides in the nucleotide sequence encoded by said human cDNA clone.

A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 500 contiguous nucleotides in the nucleotide sequence encoded by said human cDNA clone.

A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence encoded by said human cDNA clone.

A further preferred embodiment is a method for detecting in a biological sample a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X wherein X is any integer as defined in Table 1; and a nucleotide sequence encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1; which method comprises a step of comparing a nucleotide sequence of at least one nucleic acid molecule in said sample with a sequence selected from said group and determining

whether the sequence of said nucleic acid molecule in said sample is at least 95% identical to said selected sequence.

Also preferred is the above method wherein said step of comparing sequences comprises determining the extent of nucleic acid hybridization between nucleic acid molecules in said sample and a nucleic acid molecule comprising said sequence selected from said group. Similarly, also preferred is the above method wherein said step of comparing sequences is performed by comparing the nucleotide sequence determined from a nucleic acid molecule in said sample with said sequence selected from said group. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

10 A further preferred embodiment is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting nucleic acid molecules in said sample, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X wherein X is any
15 integer as defined in Table 1; and a nucleotide sequence encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

The method for identifying the species, tissue or cell type of a biological sample can comprise a step of detecting nucleic acid molecules comprising a nucleotide
20 sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a gene encoding a secreted protein identified in Table 1, which method comprises a step of detecting in a biological sample
25 obtained from said subject nucleic acid molecules, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X wherein X is any integer as defined in Table 1; and a nucleotide
30 sequence encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

The method for diagnosing a pathological condition can comprise a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least
35 two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X wherein X is any integer as defined in Table 1; and a nucleotide sequence encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y wherein Y is any integer as defined in Table 1.

Also preferred is a polypeptide, wherein said sequence of contiguous amino acids is included in the amino acid sequence of SEQ ID NO:Y in the range of positions beginning with the residue at about the position of the First Amino Acid of the Secreted Portion and ending with the residue at about the Last Amino Acid of the Open Reading Frame as set forth for SEQ ID NO:Y in Table 1.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y.

Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y.

Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the complete amino acid sequence of SEQ ID NO:Y.

Further preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the complete amino acid sequence of a secreted protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

Also preferred is a polypeptide wherein said sequence of contiguous amino acids is included in the amino acid sequence of a secreted portion of the secreted protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the

amino acid sequence of the secreted portion of the protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

Also preferred is an isolated polypeptide comprising an amino acid sequence at
5 least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of the secreted portion of the protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

Also preferred is an isolated polypeptide comprising an amino acid sequence at
10 least 95% identical to the amino acid sequence of the secreted portion of the protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

Further preferred is an isolated antibody which binds specifically to a
15 polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: an amino acid sequence of SEQ ID NO:Y wherein Y is any integer as defined in Table 1; and a complete amino acid sequence of a protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in
20 the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

Further preferred is a method for detecting in a biological sample a polypeptide comprising an amino acid sequence which is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: an amino acid sequence of SEQ ID NO:Y wherein Y is any integer as defined in Table 1;
25 and a complete amino acid sequence of a protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1; which method comprises a step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group and determining
30 whether the sequence of said polypeptide molecule in said sample is at least 90% identical to said sequence of at least 10 contiguous amino acids.

Also preferred is the above method wherein said step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group comprises determining the extent of specific binding of
35 polypeptides in said sample to an antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: an

amino acid sequence of SEQ ID NO:Y wherein Y is any integer as defined in Table 1; and a complete amino acid sequence of a protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

5 Also preferred is the above method wherein said step of comparing sequences is performed by comparing the amino acid sequence determined from a polypeptide molecule in said sample with said sequence selected from said group.

Also preferred is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting polypeptide molecules in
10 said sample, if any, comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: an amino acid sequence of SEQ ID NO:Y wherein Y is any integer as defined in Table 1; and a complete amino acid sequence of a secreted protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained
15 in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

Also preferred is the above method for identifying the species, tissue or cell type of a biological sample, which method comprises a step of detecting polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a
20 sequence of at least 10 contiguous amino acids in a sequence selected from the above group.

Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a gene encoding a secreted protein identified in Table 1, which method comprises a step of detecting in a biological sample
25 obtained from said subject polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: an amino acid sequence of SEQ ID NO:Y wherein Y is any integer as defined in Table 1; and a complete amino acid
30 sequence of a secreted protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

In any of these methods, the step of detecting said polypeptide molecules includes using an antibody.

35 Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a nucleotide sequence encoding a polypeptide wherein said polypeptide comprises an amino acid sequence that is at least

90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: an amino acid sequence of SEQ ID NO:Y wherein Y is any integer as defined in Table 1; and a complete amino acid sequence of a secreted protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

Also preferred is an isolated nucleic acid molecule, wherein said nucleotide sequence encoding a polypeptide has been optimized for expression of said polypeptide in a prokaryotic host.

Also preferred is an isolated nucleic acid molecule, wherein said polypeptide comprises an amino acid sequence selected from the group consisting of: an amino acid sequence of SEQ ID NO:Y wherein Y is any integer as defined in Table 1; and a complete amino acid sequence of a secreted protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1.

Further preferred is a method of making a recombinant vector comprising inserting any of the above isolated nucleic acid molecule into a vector. Also preferred is the recombinant vector produced by this method. Also preferred is a method of making a recombinant host cell comprising introducing the vector into a host cell, as well as the recombinant host cell produced by this method.

Also preferred is a method of making an isolated polypeptide comprising culturing this recombinant host cell under conditions such that said polypeptide is expressed and recovering said polypeptide. Also preferred is this method of making an isolated polypeptide, wherein said recombinant host cell is a eukaryotic cell and said polypeptide is a secreted portion of a human secreted protein comprising an amino acid sequence selected from the group consisting of: an amino acid sequence of SEQ ID NO:Y beginning with the residue at the position of the First Amino Acid of the Secreted Portion of SEQ ID NO:Y wherein Y is an integer set forth in Table 1 and said position of the First Amino Acid of the Secreted Portion of SEQ ID NO:Y is defined in Table 1; and an amino acid sequence of a secreted portion of a protein encoded by a human cDNA clone identified by a cDNA Clone Identifier in Table 1 and contained in the deposit with the ATCC Deposit Number shown for said cDNA clone in Table 1. The isolated polypeptide produced by this method is also preferred.

Also preferred is a method of treatment of an individual in need of an increased level of a secreted protein activity, which method comprises administering to such an individual a pharmaceutical composition comprising an amount of an isolated

polypeptide, polynucleotide, or antibody of the claimed invention effective to increase the level of said protein activity in said individual.

Having generally described the invention, the same will be more readily understood by reference to the following examples, which are provided by way of illustration and are not intended as limiting.

Examples

Example 1: Isolation of a Selected cDNA Clone From the Deposited Sample

Each cDNA clone in a cited ATCC deposit is contained in a plasmid vector. Table 1 identifies the vectors used to construct the cDNA library from which each clone was isolated. In many cases, the vector used to construct the library is a phage vector from which a plasmid has been excised. The table immediately below correlates the related plasmid for each phage vector used in constructing the cDNA library. For example, where a particular clone is identified in Table 1 as being isolated in the vector "Lambda Zap," the corresponding deposited clone is in "pBluescript."

	<u>Vector Used to Construct Library</u>	<u>Corresponding Deposited Plasmid</u>
	Lambda Zap	pBluescript (pBS)
	Uni-Zap XR	pBluescript (pBS)
20	Zap Express	pBK
	lafmid BA	plafmid BA
	pSport1	pSport1
	pCMVSPORT 2.0	pCMVSPORT 2.0
	pCMVSPORT 3.0	pCMVSPORT 3.0
25	pCR®2.1	pCR®2.1

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., Nucleic Acids Res. 16:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., Nucleic Acids Res. 17:9494 (1989)) and pBK (Alting-Mees, M. A. et al., Strategies 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Both can be transformed into E. coli strain XL-1 Blue, also available from Stratagene. pBS comes in 4 forms SK+, SK-, KS+ and KS. The S and K refers to the orientation of the polylinker to the T7 and T3 primer sequences which flank the polylinker region ("S" is for SacI and "K" is for KpnI which are the first sites on each respective end of the linker). "+" or "-" refer to the orientation

of the f1 origin of replication ("ori"), such that in one orientation, single stranded rescue initiated from the f1 ori generates sense strand DNA and in the other, antisense.

Vectors pSport1, pCMVSPORT 2.0 and pCMVSPORT 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors
5 contain an ampicillin resistance gene and may be transformed into E. coli strain DH10B, also available from Life Technologies. (See, for instance, Gruber, C. E., et al., Focus 15:59 (1993).) Vector lafmid BA (Bento Soares, Columbia University, NY) contains an ampicillin resistance gene and can be transformed into E. coli strain XL-1 Blue. Vector pCR[®]2.1, which is available from Invitrogen, 1600 Faraday Avenue,
10 Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into E. coli strain DH10B, available from Life Technologies. (See, for instance, Clark, J. M., Nuc. Acids Res. 16:9677-9686 (1988) and Mead, D. et al., Bio/Technology 9: (1991).) Preferably, a polynucleotide of the present invention does not comprise the phage vector sequences identified for the particular clone in Table 1, as well as the
15 corresponding plasmid vector sequences designated above.

The deposited material in the sample assigned the ATCC Deposit Number cited in Table 1 for any given cDNA clone also may contain one or more additional plasmids, each comprising a cDNA clone different from that given clone. Thus, deposits sharing the same ATCC Deposit Number contain at least a plasmid for each cDNA clone
20 identified in Table 1. Typically, each ATCC deposit sample cited in Table 1 comprises a mixture of approximately equal amounts (by weight) of about 50 plasmid DNAs, each containing a different cDNA clone; but such a deposit sample may include plasmids for more or less than 50 cDNA clones, up to about 500 cDNA clones.

Two approaches can be used to isolate a particular clone from the deposited
25 sample of plasmid DNAs cited for that clone in Table 1. First, a plasmid is directly isolated by screening the clones using a polynucleotide probe corresponding to SEQ ID NO:X.

Particularly, a specific polynucleotide with 30-40 nucleotides is synthesized using an Applied Biosystems DNA synthesizer according to the sequence reported.
30 The oligonucleotide is labeled, for instance, with ³²P-γ-ATP using T4 polynucleotide kinase and purified according to routine methods. (E.g., Maniatis et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Press, Cold Spring, NY (1982).) The plasmid mixture is transformed into a suitable host, as indicated above (such as XL-1 Blue (Stratagene)) using techniques known to those of skill in the art, such as
35 those provided by the vector supplier or in related publications or patents cited above. The transformants are plated on 1.5% agar plates (containing the appropriate selection

agent, e.g., ampicillin) to a density of about 150 transformants (colonies) per plate. These plates are screened using Nylon membranes according to routine methods for bacterial colony screening (e.g., Sambrook et al., *Molecular Cloning: A Laboratory Manual*, 2nd Edit., (1989), Cold Spring Harbor Laboratory Press, pages 1.93 to 1.104), or other techniques known to those of skill in the art.

Alternatively, two primers of 17-20 nucleotides derived from both ends of the SEQ ID NO:X (i.e., within the region of SEQ ID NO:X bounded by the 5' NT and the 3' NT of the clone defined in Table 1) are synthesized and used to amplify the desired cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25 μ l of reaction mixture with 0.5 μ g of the above cDNA template. A convenient reaction mixture is 1.5-5 mM $MgCl_2$, 0.01% (w/v) gelatin, 20 μ M each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of Taq polymerase. Thirty five cycles of PCR (denaturation at 94°C for 1 min; annealing at 55°C for 1 min; elongation at 72°C for 1 min) are performed with a Perkin-Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis and the DNA band with expected molecular weight is excised and purified. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA product.

Several methods are available for the identification of the 5' or 3' non-coding portions of a gene which may not be present in the deposited clone. These methods include but are not limited to, filter probing, clone enrichment using specific probes, and protocols similar or identical to 5' and 3' "RACE" protocols which are well known in the art. For instance, a method similar to 5' RACE is available for generating the missing 5' end of a desired full-length transcript. (Fromont-Racine et al., *Nucleic Acids Res.* 21(7):1683-1684 (1993).)

Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcripts. A primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest is used to PCR amplify the 5' portion of the desired full-length gene. This amplified product may then be sequenced and used to generate the full length gene.

This above method starts with total RNA isolated from the desired source, although poly-A+ RNA can be used. The RNA preparation can then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase should then be inactivated and the RNA treated with tobacco acid pyrophosphatase in order to

remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase.

5 This modified RNA preparation is used as a template for first strand cDNA synthesis using a gene specific oligonucleotide. The first strand synthesis reaction is used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide and a primer specific to the known sequence of the gene of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the desired gene.

10

Example 2: Isolation of Genomic Clones Corresponding to a Polynucleotide

A human genomic P1 library (Genomic Systems, Inc.) is screened by PCR using primers selected for the cDNA sequence corresponding to SEQ ID NO:X.,
15 according to the method described in Example 1. (See also, Sambrook.)

Example 3: Tissue Distribution of Polypeptide

Tissue distribution of mRNA expression of polynucleotides of the present invention is determined using protocols for Northern blot analysis, described by,
20 among others, Sambrook et al. For example, a cDNA probe produced by the method described in Example 1 is labeled with P³² using the rediprime™ DNA labeling system (Amersham Life Science), according to manufacturer's instructions. After labeling, the probe is purified using CHROMA SPIN-100™ column (Clontech Laboratories, Inc.), according to manufacturer's protocol number PT1200-1. The purified labeled probe is
25 then used to examine various human tissues for mRNA expression.

Multiple Tissue Northern (MTN) blots containing various human tissues (H) or human immune system tissues (IM) (Clontech) are examined with the labeled probe using ExpressHyb™ hybridization solution (Clontech) according to manufacturer's protocol number PT1190-1. Following hybridization and washing, the blots are
30 mounted and exposed to film at -70°C overnight, and the films developed according to standard procedures.

Example 4: Chromosomal Mapping of the Polynucleotides

An oligonucleotide primer set is designed according to the sequence at the 5'
35 end of SEQ ID NO:X. This primer preferably spans about 100 nucleotides. This primer set is then used in a polymerase chain reaction under the following set of

conditions : 30 seconds, 95°C; 1 minute, 56°C; 1 minute, 70°C. This cycle is repeated 32 times followed by one 5 minute cycle at 70°C. Human, mouse, and hamster DNA is used as template in addition to a somatic cell hybrid panel containing individual chromosomes or chromosome fragments (Bios, Inc). The reactions is analyzed on either 8% polyacrylamide gels or 3.5 % agarose gels. Chromosome mapping is determined by the presence of an approximately 100 bp PCR fragment in the particular somatic cell hybrid.

Example 5: Bacterial Expression of a Polypeptide

10 A polynucleotide encoding a polypeptide of the present invention is amplified using PCR oligonucleotide primers corresponding to the 5' and 3' ends of the DNA sequence, as outlined in Example 1, to synthesize insertion fragments. The primers used to amplify the cDNA insert should preferably contain restriction sites, such as BamHI and XbaI, at the 5' end of the primers in order to clone the amplified product into the expression vector. For example, BamHI and XbaI correspond to the restriction enzyme sites on the bacterial expression vector pQE-9. (Qiagen, Inc., Chatsworth, CA). This plasmid vector encodes antibiotic resistance (Amp^r), a bacterial origin of replication (ori), an IPTG-regulatable promoter/operator (P/O), a ribosome binding site (RBS), a 6-histidine tag (6-His), and restriction enzyme cloning sites.

20 The pQE-9 vector is digested with BamHI and XbaI and the amplified fragment is ligated into the pQE-9 vector maintaining the reading frame initiated at the bacterial RBS. The ligation mixture is then used to transform the E. coli strain M15/rep4 (Qiagen, Inc.) which contains multiple copies of the plasmid pREP4, which expresses the lacI repressor and also confers kanamycin resistance (Kan^r). Transformants are identified by their ability to grow on LB plates and ampicillin/kanamycin resistant colonies are selected. Plasmid DNA is isolated and confirmed by restriction analysis.

Clones containing the desired constructs are grown overnight (O/N) in liquid culture in LB media supplemented with both Amp (100 ug/ml) and Kan (25 ug/ml). The O/N culture is used to inoculate a large culture at a ratio of 1:100 to 1:250. The cells are grown to an optical density 600 (O.D.⁶⁰⁰) of between 0.4 and 0.6. IPTG (Isopropyl-B-D-thiogalacto pyranoside) is then added to a final concentration of 1 mM. IPTG induces by inactivating the lacI repressor, clearing the P/O leading to increased gene expression.

35 Cells are grown for an extra 3 to 4 hours. Cells are then harvested by centrifugation (20 mins at 6000Xg). The cell pellet is solubilized in the chaotropic

agent 6 Molar Guanidine HCl by stirring for 3-4 hours at 4°C. The cell debris is removed by centrifugation, and the supernatant containing the polypeptide is loaded onto a nickel-nitrilo-tri-acetic acid ("Ni-NTA") affinity resin column (available from QIAGEN, Inc., *supra*). Proteins with a 6 x His tag bind to the Ni-NTA resin with high
5 affinity and can be purified in a simple one-step procedure (for details see: The QIAexpressionist (1995) QIAGEN, Inc., *supra*).

Briefly, the supernatant is loaded onto the column in 6 M guanidine-HCl, pH 8, the column is first washed with 10 volumes of 6 M guanidine-HCl, pH 8, then washed with 10 volumes of 6 M guanidine-HCl pH 6, and finally the polypeptide is eluted with
10 6 M guanidine-HCl, pH 5.

The purified protein is then renatured by dialyzing it against phosphate-buffered saline (PBS) or 50 mM Na-acetate, pH 6 buffer plus 200 mM NaCl. Alternatively, the protein can be successfully refolded while immobilized on the Ni-NTA column. The recommended conditions are as follows: renature using a linear 6M-1M urea gradient in
15 500 mM NaCl, 20% glycerol, 20 mM Tris/HCl pH 7.4, containing protease inhibitors. The renaturation should be performed over a period of 1.5 hours or more. After renaturation the proteins are eluted by the addition of 250 mM imidazole. Imidazole is removed by a final dialyzing step against PBS or 50 mM sodium acetate pH 6 buffer plus 200 mM NaCl. The purified protein is stored at 4°C or frozen at -80°C.

In addition to the above expression vector, the present invention further includes
20 an expression vector comprising phage operator and promoter elements operatively linked to a polynucleotide of the present invention, called pHE4a. (ATCC Accession Number XXXXXX.) This vector contains: 1) a neomycinphosphotransferase gene as a selection marker, 2) an E. coli origin of replication, 3) a T5 phage promoter sequence,
25 4) two lac operator sequences, 5) a Shine-Delgarno sequence, and 6) the lactose operon repressor gene (lacIq). The origin of replication (oriC) is derived from pUC19 (LTI, Gaithersburg, MD). The promoter sequence and operator sequences are made synthetically.

DNA can be inserted into the pHEa by restricting the vector with NdeI and
30 XbaI, BamHI, XhoI, or Asp718, running the restricted product on a gel, and isolating the larger fragment (the stuffer fragment should be about 310 base pairs). The DNA insert is generated according to the PCR protocol described in Example 1, using PCR primers having restriction sites for NdeI (5' primer) and XbaI, BamHI, XhoI, or Asp718 (3' primer). The PCR insert is gel purified and restricted with compatible
35 enzymes. The insert and vector are ligated according to standard protocols.

The engineered vector could easily be substituted in the above protocol to express protein in a bacterial system.

Example 6: Purification of a Polypeptide from an Inclusion Body

- 5 The following alternative method can be used to purify a polypeptide expressed in *E. coli* when it is present in the form of inclusion bodies. Unless otherwise specified, all of the following steps are conducted at 4-10°C.

 Upon completion of the production phase of the *E. coli* fermentation, the cell culture is cooled to 4-10°C and the cells harvested by continuous centrifugation at
10 15,000 rpm (Heraeus Sepatech). On the basis of the expected yield of protein per unit weight of cell paste and the amount of purified protein required, an appropriate amount of cell paste, by weight, is suspended in a buffer solution containing 100 mM Tris, 50 mM EDTA, pH 7.4. The cells are dispersed to a homogeneous suspension using a high shear mixer.

- 15 The cells are then lysed by passing the solution through a microfluidizer (Microfluidics, Corp. or APV Gaulin, Inc.) twice at 4000-6000 psi. The homogenate is then mixed with NaCl solution to a final concentration of 0.5 M NaCl, followed by centrifugation at 7000 xg for 15 min. The resultant pellet is washed again using 0.5M NaCl, 100 mM Tris, 50 mM EDTA, pH 7.4.

- 20 The resulting washed inclusion bodies are solubilized with 1.5 M guanidine hydrochloride (GuHCl) for 2-4 hours. After 7000 xg centrifugation for 15 min., the pellet is discarded and the polypeptide containing supernatant is incubated at 4°C overnight to allow further GuHCl extraction.

- Following high speed centrifugation (30,000 xg) to remove insoluble particles,
25 the GuHCl solubilized protein is refolded by quickly mixing the GuHCl extract with 20 volumes of buffer containing 50 mM sodium, pH 4.5, 150 mM NaCl, 2 mM EDTA by vigorous stirring. The refolded diluted protein solution is kept at 4°C without mixing for 12 hours prior to further purification steps.

- To clarify the refolded polypeptide solution, a previously prepared tangential
30 filtration unit equipped with 0.16 µm membrane filter with appropriate surface area (e.g., Filtron), equilibrated with 40 mM sodium acetate, pH 6.0 is employed. The filtered sample is loaded onto a cation exchange resin (e.g., Poros HS-50, Perseptive Biosystems). The column is washed with 40 mM sodium acetate, pH 6.0 and eluted with 250 mM, 500 mM, 1000 mM, and 1500 mM NaCl in the same buffer, in a

stepwise manner. The absorbance at 280 nm of the effluent is continuously monitored. Fractions are collected and further analyzed by SDS-PAGE.

Fractions containing the polypeptide are then pooled and mixed with 4 volumes of water. The diluted sample is then loaded onto a previously prepared set of tandem
5 columns of strong anion (Poros HQ-50, Perseptive Biosystems) and weak anion (Poros CM-20, Perseptive Biosystems) exchange resins. The columns are equilibrated with 40 mM sodium acetate, pH 6.0. Both columns are washed with 40 mM sodium acetate, pH 6.0, 200 mM NaCl. The CM-20 column is then eluted using a 10 column volume linear gradient ranging from 0.2 M NaCl, 50 mM sodium acetate, pH 6.0 to 1.0
10 M NaCl, 50 mM sodium acetate, pH 6.5. Fractions are collected under constant A_{280} monitoring of the effluent. Fractions containing the polypeptide (determined, for instance, by 16% SDS-PAGE) are then pooled.

The resultant polypeptide should exhibit greater than 95% purity after the above refolding and purification steps. No major contaminant bands should be observed from
15 Commassie blue stained 16% SDS-PAGE gel when 5 μ g of purified protein is loaded. The purified protein can also be tested for endotoxin/LPS contamination, and typically the LPS content is less than 0.1 ng/ml according to LAL assays.

Example 7: Cloning and Expression of a Polypeptide in a Baculovirus 20 **Expression System**

In this example, the plasmid shuttle vector pA2 is used to insert a polynucleotide into a baculovirus to express a polypeptide. This expression vector contains the strong polyhedrin promoter of the *Autographa californica* nuclear polyhedrosis virus (AcMNPV) followed by convenient restriction sites such as BamHI, Xba I and
25 Asp718. The polyadenylation site of the simian virus 40 ("SV40") is used for efficient polyadenylation. For easy selection of recombinant virus, the plasmid contains the beta-galactosidase gene from *E. coli* under control of a weak *Drosophila* promoter in the same orientation, followed by the polyadenylation signal of the polyhedrin gene. The inserted genes are flanked on both sides by viral sequences for cell-mediated
30 homologous recombination with wild-type viral DNA to generate a viable virus that express the cloned polynucleotide.

Many other baculovirus vectors can be used in place of the vector above, such as pAc373, pVL941, and pAcIM1, as one skilled in the art would readily appreciate, as long as the construct provides appropriately located signals for transcription,
35 translation, secretion and the like, including a signal peptide and an in-frame AUG as

required. Such vectors are described, for instance, in Luckow et al., Virology 170:31-39 (1989).

Specifically, the cDNA sequence contained in the deposited clone, including the AUG initiation codon and the naturally associated leader sequence identified in Table 1, is amplified using the PCR protocol described in Example 1. If the naturally occurring signal sequence is used to produce the secreted protein, the pA2 vector does not need a second signal peptide. Alternatively, the vector can be modified (pA2 GP) to include a baculovirus leader sequence, using the standard methods described in Summers et al., "A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures," Texas Agricultural Experimental Station Bulletin No. 1555 (1987).

The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("Geneclean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

The plasmid is digested with the corresponding restriction enzymes and optionally, can be dephosphorylated using calf intestinal phosphatase, using routine procedures known in the art. The DNA is then isolated from a 1% agarose gel using a commercially available kit ("Geneclean" BIO 101 Inc., La Jolla, Ca.).

The fragment and the dephosphorylated plasmid are ligated together with T4 DNA ligase. *E. coli* HB101 or other suitable *E. coli* hosts such as XL-1 Blue (Stratagene Cloning Systems, La Jolla, CA) cells are transformed with the ligation mixture and spread on culture plates. Bacteria containing the plasmid are identified by digesting DNA from individual colonies and analyzing the digestion product by gel electrophoresis. The sequence of the cloned fragment is confirmed by DNA sequencing.

Five µg of a plasmid containing the polynucleotide is co-transfected with 1.0 µg of a commercially available linearized baculovirus DNA ("BaculoGold™ baculovirus DNA", Pharmingen, San Diego, CA), using the lipofection method described by Felgner et al., Proc. Natl. Acad. Sci. USA 84:7413-7417 (1987). One µg of BaculoGold™ virus DNA and 5 µg of the plasmid are mixed in a sterile well of a microtiter plate containing 50 µl of serum-free Grace's medium (Life Technologies Inc., Gaithersburg, MD). Afterwards, 10 µl Lipofectin plus 90 µl Grace's medium are added, mixed and incubated for 15 minutes at room temperature. Then the transfection mixture is added drop-wise to Sf9 insect cells (ATCC CRL 1711) seeded in a 35 mm tissue culture plate with 1 ml Grace's medium without serum. The plate is then incubated for 5 hours at 27° C. The transfection solution is then removed from the plate and 1 ml of Grace's insect medium supplemented with 10% fetal calf serum is added. Cultivation is then continued at 27° C for four days.

After four days the supernatant is collected and a plaque assay is performed, as described by Summers and Smith, *supra*. An agarose gel with "Blue Gal" (Life Technologies Inc., Gaithersburg) is used to allow easy identification and isolation of gal-expressing clones, which produce blue-stained plaques. (A detailed description of a
5 "plaque assay" of this type can also be found in the user's guide for insect cell culture and baculovirology distributed by Life Technologies Inc., Gaithersburg, page 9-10.) After appropriate incubation, blue stained plaques are picked with the tip of a micropipettor (e.g., Eppendorf). The agar containing the recombinant viruses is then resuspended in a microcentrifuge tube containing 200 μ l of Grace's medium and the
10 suspension containing the recombinant baculovirus is used to infect Sf9 cells seeded in 35 mm dishes. Four days later the supernatants of these culture dishes are harvested and then they are stored at 4° C.

To verify the expression of the polypeptide, Sf9 cells are grown in Grace's medium supplemented with 10% heat-inactivated FBS. The cells are infected with the
15 recombinant baculovirus containing the polynucleotide at a multiplicity of infection ("MOI") of about 2. If radiolabeled proteins are desired, 6 hours later the medium is removed and is replaced with SF900 II medium minus methionine and cysteine (available from Life Technologies Inc., Rockville, MD). After 42 hours, 5 μ Ci of 35 S-methionine and 5 μ Ci 35 S-cysteine (available from Amersham) are added. The cells are
20 further incubated for 16 hours and then are harvested by centrifugation. The proteins in the supernatant as well as the intracellular proteins are analyzed by SDS-PAGE followed by autoradiography (if radiolabeled).

Microsequencing of the amino acid sequence of the amino terminus of purified protein may be used to determine the amino terminal sequence of the produced protein.

25 **Example 8: Expression of a Polypeptide in Mammalian Cells**

The polypeptide of the present invention can be expressed in a mammalian cell. A typical mammalian expression vector contains a promoter element, which mediates the initiation of transcription of mRNA, a protein coding sequence, and signals required for the termination of transcription and polyadenylation of the transcript. Additional
30 elements include enhancers, Kozak sequences and intervening sequences flanked by donor and acceptor sites for RNA splicing. Highly efficient transcription is achieved with the early and late promoters from SV40, the long terminal repeats (LTRs) from Retroviruses, e.g., RSV, HTLVI, HIVI and the early promoter of the cytomegalovirus (CMV). However, cellular elements can also be used (e.g., the human actin promoter).

35 Suitable expression vectors for use in practicing the present invention include, for example, vectors such as pSVL and pMSG (Pharmacia, Uppsala, Sweden),

pRSVcat (ATCC 37152), pSV2dhfr (ATCC 37146), pBC12MI (ATCC 67109), pCMVSPORT 2.0, and pCMVSPORT 3.0. Mammalian host cells that could be used include, human Hela, 293, H9 and Jurkat cells, mouse NIH3T3 and C127 cells, Cos 1, Cos 7 and CV1, quail QC1-3 cells, mouse L cells and Chinese hamster ovary (CHO) cells.

Alternatively, the polypeptide can be expressed in stable cell lines containing the polynucleotide integrated into a chromosome. The co-transfection with a selectable marker such as dhfr, gpt, neomycin, hygromycin allows the identification and isolation of the transfected cells.

The transfected gene can also be amplified to express large amounts of the encoded protein. The DHFR (dihydrofolate reductase) marker is useful in developing cell lines that carry several hundred or even several thousand copies of the gene of interest. (See, e.g., Alt, F. W., et al., J. Biol. Chem. 253:1357-1370 (1978); Hamlin, J. L. and Ma, C., Biochem. et Biophys. Acta, 1097:107-143 (1990); Page, M. J. and Sydenham, M. A., Biotechnology 9:64-68 (1991).) Another useful selection marker is the enzyme glutamine synthase (GS) (Murphy et al., Biochem J. 227:277-279 (1991); Bebbington et al., Bio/Technology 10:169-175 (1992). Using these markers, the mammalian cells are grown in selective medium and the cells with the highest resistance are selected. These cell lines contain the amplified gene(s) integrated into a chromosome. Chinese hamster ovary (CHO) and NSO cells are often used for the production of proteins.

Derivatives of the plasmid pSV2-dhfr (ATCC Accession No. 37146), the expression vectors pC4 (ATCC Accession No. 209646) and pC6 (ATCC Accession No. 209647) contain the strong promoter (LTR) of the Rous Sarcoma Virus (Cullen et al., Molecular and Cellular Biology, 438-447 (March, 1985)) plus a fragment of the CMV-enhancer (Boshart et al., Cell 41:521-530 (1985).) Multiple cloning sites, e.g., with the restriction enzyme cleavage sites BamHI, XbaI and Asp718, facilitate the cloning of the gene of interest. The vectors also contain the 3' intron, the polyadenylation and termination signal of the rat preproinsulin gene, and the mouse DHFR gene under control of the SV40 early promoter.

Specifically, the plasmid pC6, for example, is digested with appropriate restriction enzymes and then dephosphorylated using calf intestinal phosphates by procedures known in the art. The vector is then isolated from a 1% agarose gel.

A polynucleotide of the present invention is amplified according to the protocol outlined in Example 1. If the naturally occurring signal sequence is used to produce the secreted protein, the vector does not need a second signal peptide. Alternatively, if the

naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., WO 96/34891.)

5 The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("GeneClean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

The amplified fragment is then digested with the same restriction enzyme and purified on a 1% agarose gel. The isolated fragment and the dephosphorylated vector are then ligated with T4 DNA ligase. *E. coli* HB101 or XL-1 Blue cells are then transformed and bacteria are identified that contain the fragment inserted into plasmid pC6 using, for instance, restriction enzyme analysis.

Chinese hamster ovary cells lacking an active DHFR gene is used for transfection. Five μ g of the expression plasmid pC6 is cotransfected with 0.5 μ g of the plasmid pSVneo using lipofectin (Felgner et al., *supra*). The plasmid pSV2-neo contains a dominant selectable marker, the *neo* gene from Tn5 encoding an enzyme that confers resistance to a group of antibiotics including G418. The cells are seeded in alpha minus MEM supplemented with 1 mg/ml G418. After 2 days, the cells are trypsinized and seeded in hybridoma cloning plates (Greiner, Germany) in alpha minus MEM supplemented with 10, 25, or 50 ng/ml of methotrexate plus 1 mg/ml G418. After about 10-14 days single clones are trypsinized and then seeded in 6-well petri dishes or 10 ml flasks using different concentrations of methotrexate (50 nM, 100 nM, 200 nM, 400 nM, 800 nM). Clones growing at the highest concentrations of methotrexate are then transferred to new 6-well plates containing even higher concentrations of methotrexate (1 μ M, 2 μ M, 5 μ M, 10 mM, 20 mM). The same procedure is repeated until clones are obtained which grow at a concentration of 100 - 200 μ M. Expression of the desired gene product is analyzed, for instance, by SDS-PAGE and Western blot or by reversed phase HPLC analysis.

Example 9: Protein Fusions

The polypeptides of the present invention are preferably fused to other proteins. These fusion proteins can be used for a variety of applications. For example, fusion of the present polypeptides to His-tag, HA-tag, protein A, IgG domains, and maltose binding protein facilitates purification. (See Example 5; see also EP A 394,827; Traunecker, et al., Nature 331:84-86 (1988).) Similarly, fusion to IgG-1, IgG-3, and albumin increases the halflife time in vivo. Nuclear localization signals fused to the polypeptides of the present invention can target the protein to a specific subcellular localization, while covalent heterodimer or homodimers can increase or decrease the activity of a fusion protein. Fusion proteins can also create chimeric molecules having

more than one function. Finally, fusion proteins can increase solubility and/or stability of the fused protein compared to the non-fused protein. All of the types of fusion proteins described above can be made by modifying the following protocol, which outlines the fusion of a polypeptide to an IgG molecule, or the protocol described in

5 Example 5.

Briefly, the human Fc portion of the IgG molecule can be PCR amplified, using primers that span the 5' and 3' ends of the sequence described below. These primers also should have convenient restriction enzyme sites that will facilitate cloning into an expression vector, preferably a mammalian expression vector.

10 For example, if pC4 (Accession No.209646) is used, the human Fc portion can be ligated into the BamHI cloning site. Note that the 3' BamHI site should be destroyed. Next, the vector containing the human Fc portion is re-restricted with BamHI, linearizing the vector, and a polynucleotide of the present invention, isolated by the PCR protocol described in Example 1, is ligated into this BamHI site. Note that
15 the polynucleotide is cloned without a stop codon, otherwise a fusion protein will not be produced.

If the naturally occurring signal sequence is used to produce the secreted protein, pC4 does not need a second signal peptide. Alternatively, if the naturally occurring signal sequence is not used, the vector can be modified to include a
20 heterologous signal sequence. (See, e.g., WO 96/34891.)

Human IgG Fc region:

GGGATCCGGAGCCCAAATCTTCTGACAAACTCACACATGCCCACCGTGCC
CAGCACCTGAATTCGAGGGTGCACCGTCAGTCTTCCTCTTCCCCCAAACC
25 CAAGGACACCCTCATGATCTCCCGGACTCCTGAGGTCACATGCGTGGTGGT
GGACGTAAGCCACGAAGACCCTGAGGTCAAGTTCAACTGGTACGTGGACG
GCGTGGAGGTGCATAATGCCAAGACAAAGCCGCGGGAGGAGCAGTACAAC
AGCACGTACCGTGTGGTCAGCGTCCTACCGTCCTGCACCAGGACTGGCTG
AATGGCAAGGAGTACAAGTGCAAGGTCTCCAACAAAGCCCTCCCAACCCCC
30 ATCGAGAAAACCATCTCCAAAGCCAAAGGGCAGCCCCGAGAACCACAGGT
GTACACCCTGCCCCCATCCCGGGATGAGCTGACCAAGAACCAGGTCAGCCT
GACCTGCCTGGTCAAAGGCTTCTATCCAAGCGACATCGCCGTGGAGTGGGA
GAGCAATGGGCAGCCGGAGAACAACACTACAAGACCACGCCTCCCGTGCTGG
ACTCCGACGGCTCCTTCTTCTCTACAGCAAGCTCACCGTGGACAAGAGCA
35 GGTGGCAGCAGGGGAACGTCTTCTCATGCTCCGTGATGCATGAGGCTCTGC
ACAACCACTACACGCAGAAGAGCCTCTCCCTGTCTCCGGGTAAATGAGTGC
GACGGCCGCGACTCTAGAGGAT (SEQ ID NO:1)

Example 10: Production of an Antibody from a Polypeptide

The antibodies of the present invention can be prepared by a variety of methods. (See, Current Protocols, Chapter 2.) For example, cells expressing a polypeptide of the present invention is administered to an animal to induce the production of sera containing polyclonal antibodies. In a preferred method, a preparation of the secreted protein is prepared and purified to render it substantially free of natural contaminants. Such a preparation is then introduced into an animal in order to produce polyclonal antisera of greater specific activity.

In the most preferred method, the antibodies of the present invention are monoclonal antibodies (or protein binding fragments thereof). Such monoclonal antibodies can be prepared using hybridoma technology. (Köhler et al., Nature 256:495 (1975); Köhler et al., Eur. J. Immunol. 6:511 (1976); Köhler et al., Eur. J. Immunol. 6:292 (1976); Hammerling et al., in: Monoclonal Antibodies and T-Cell Hybridomas, Elsevier, N.Y., pp. 563-681 (1981).) In general, such procedures involve immunizing an animal (preferably a mouse) with polypeptide or, more preferably, with a secreted polypeptide-expressing cell. Such cells may be cultured in any suitable tissue culture medium; however, it is preferable to culture cells in Earle's modified Eagle's medium supplemented with 10% fetal bovine serum (inactivated at about 56°C), and supplemented with about 10 g/l of nonessential amino acids, about 1,000 U/ml of penicillin, and about 100 µg/ml of streptomycin.

The splenocytes of such mice are extracted and fused with a suitable myeloma cell line. Any suitable myeloma cell line may be employed in accordance with the present invention; however, it is preferable to employ the parent myeloma cell line (SP2O), available from the ATCC. After fusion, the resulting hybridoma cells are selectively maintained in HAT medium, and then cloned by limiting dilution as described by Wands et al. (Gastroenterology 80:225-232 (1981).) The hybridoma cells obtained through such a selection are then assayed to identify clones which secrete antibodies capable of binding the polypeptide.

Alternatively, additional antibodies capable of binding to the polypeptide can be produced in a two-step procedure using anti-idiotypic antibodies. Such a method makes use of the fact that antibodies are themselves antigens, and therefore, it is possible to obtain an antibody which binds to a second antibody. In accordance with this method, protein specific antibodies are used to immunize an animal, preferably a mouse. The splenocytes of such an animal are then used to produce hybridoma cells, and the hybridoma cells are screened to identify clones which produce an antibody

whose ability to bind to the protein-specific antibody can be blocked by the polypeptide. Such antibodies comprise anti-idiotypic antibodies to the protein-specific antibody and can be used to immunize an animal to induce formation of further protein-specific antibodies.

5 It will be appreciated that Fab and F(ab')₂ and other fragments of the antibodies of the present invention may be used according to the methods disclosed herein. Such fragments are typically produced by proteolytic cleavage, using enzymes such as papain (to produce Fab fragments) or pepsin (to produce F(ab')₂ fragments). Alternatively, secreted protein-binding fragments can be produced through the application of
10 recombinant DNA technology or through synthetic chemistry.

For in vivo use of antibodies in humans, it may be preferable to use "humanized" chimeric monoclonal antibodies. Such antibodies can be produced using genetic constructs derived from hybridoma cells producing the monoclonal antibodies described above. Methods for producing chimeric antibodies are known in the art.
15 (See, for review, Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., WO 8702671; Boulianne et al., Nature 312:643 (1984); Neuberger et al., Nature 314:268 (1985).)

20

Example 11: Production Of Secreted Protein For High-Throughput Screening Assays

The following protocol produces a supernatant containing a polypeptide to be tested. This supernatant can then be used in the Screening Assays described in
25 Examples 13-20.

First, dilute Poly-D-Lysine (644 587 Boehringer-Mannheim) stock solution (1mg/ml in PBS) 1:20 in PBS (w/o calcium or magnesium 17-516F Biowhittaker) for a working solution of 50ug/ml. Add 200 ul of this solution to each well (24 well plates) and incubate at RT for 20 minutes. Be sure to distribute the solution over each well
30 (note: a 12-channel pipetter may be used with tips on every other channel). Aspirate off the Poly-D-Lysine solution and rinse with 1ml PBS (Phosphate Buffered Saline). The PBS should remain in the well until just prior to plating the cells and plates may be poly-lysine coated in advance for up to two weeks.

Plate 293T cells (do not carry cells past P+20) at 2×10^5 cells/well in .5ml
35 DMEM(Dulbecco's Modified Eagle Medium)(with 4.5 G/L glucose and L-glutamine (12-604F Biowhittaker))/10% heat inactivated FBS(14-503F Biowhittaker)/1x Penstrep(17-602E Biowhittaker). Let the cells grow overnight.

The next day, mix together in a sterile solution basin: 300 ul Lipofectamine (18324-012 Gibco/BRL) and 5ml Optimem I (31985070 Gibco/BRL)/96-well plate. With a small volume multi-channel pipetter, aliquot approximately 2ug of an expression vector containing a polynucleotide insert, produced by the methods described in

5 Examples 8 or 9, into an appropriately labeled 96-well round bottom plate. With a multi-channel pipetter, add 50ul of the Lipofectamine/Optimem I mixture to each well. Pipette up and down gently to mix. Incubate at RT 15-45 minutes. After about 20 minutes, use a multi-channel pipetter to add 150ul Optimem I to each well. As a control, one plate of vector DNA lacking an insert should be transfected with each set of

10 transfections.

Preferably, the transfection should be performed by tag-teaming the following tasks. By tag-teaming, hands on time is cut in half, and the cells do not spend too much time on PBS. First, person A aspirates off the media from four 24-well plates of cells, and then person B rinses each well with .5-1ml PBS. Person A then aspirates off

15 PBS rinse, and person B, using a 12-channel pipetter with tips on every other channel, adds the 200ul of DNA/Lipofectamine/Optimem I complex to the odd wells first, then to the even wells, to each row on the 24-well plates. Incubate at 37°C for 6 hours.

While cells are incubating, prepare appropriate media, either 1%BSA in DMEM with 1x penstrep, or CHO-5 media (see below) with 2mm glutamine and 1x penstrep.

20 (BSA (81-068-3 Bayer) 100gm dissolved in 1L DMEM for a 10% BSA stock solution). Filter the media and collect 50 ul for endotoxin assay in 15ml polystyrene conical.

The transfection reaction is terminated, preferably by tag-teaming, at the end of the incubation period. Person A aspirates off the transfection media, while person B

25 adds 1.5ml appropriate media to each well. Incubate at 37°C for 45 or 72 hours depending on the media used: 1%BSA for 45 hours or CHO-5 for 72 hours.

On day four, using a 300ul multichannel pipetter, aliquot 600ul in one 1ml deep well plate and the remaining supernatant into a 2ml deep well. The supernatants from each well can then be used in the assays described in Examples 13-20.

30 It is specifically understood that when activity is obtained in any of the assays described below using a supernatant, the activity originates from either the polypeptide directly (e.g., as a secreted protein) or by the polypeptide inducing expression of other proteins, which are then secreted into the supernatant. Thus, the invention further provides a method of identifying the protein in the supernatant characterized by an

35 activity in a particular assay.

HGS-CHO-5 medium formulation:**Inorganic Salts**

CaCl ₂ (anhyd)	116.6 mg/L
CuSO ₄ ·5H ₂ O	0.00130
Fe(NO ₃) ₃ ·9H ₂ O	0.050
FeSO ₄ ·7H ₂ O	0.417
KCl	311.80
MgCl ₂	28.64
MgSO ₄	48.84
NaCl	6995.50
NaHCO ₃	2400.0
NaH ₂ PO ₄ ·H ₂ O	62.50
Na ₂ HPO ₄	71.02
ZnSO ₄ ·7H ₂ O	.4320

5 Lipids

Arachidonic Acid	.002 mg/L
Cholesterol	1.022
DL-alpha-Tocopherol-Acetate	.070
Linoleic Acid	0.0520
Linolenic Acid	0.010
Myristic Acid	0.010
Oleic Acid	0.010
Palmitic Acid	0.010
Palmitic Acid	0.010
Pluronic F-68	100
Stearic Acid	0.010
Tween 80	2.20

Carbon Source

D-Glucose	4551 mg/L
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Amino Acids

L- Alanine	130.85 mg/ml
L-Arginine-HCL	147.50
L-Asparagine-H ₂ O	7.50
L-Aspartic Acid	6.65
L-Cystine-2HCL-H ₂ O	29.56
L-Cystine-2HCL	31.29
L-Glutamic Acid	7.35
L-Glutamine	365.0
Glycine	18.75
L-Histidine-HCL-	52.48

H ₂ O	
L-Isoleucine	106.97
L-Leucine	111.45
L-Lysine HCL	163.75
L-Methionine	32.34
L-Phenylalanine	68.48
L-Proline	40.0
L-Serine	26.25
L-Threonine	101.05
L-Tryptophan	19.22
L-Tyrosine-2Na-2H ₂ O	91.79
L-Valine	99.65

Vitamins

Biotin	0.0035 mg/L
D-Ca Pantothenate	3.24
Choline Chloride	11.78
Folic Acid	4.65
i-Inositol	15.60
Niacinamide	3.02
Pyridoxal HCL	3.00
Pyridoxine HCL	0.031
Riboflavin	0.319
Thiamine HCL	3.17
Thymidine	0.365
Vitamin B ₁₂	0.680

Other Components

HEPES Buffer	25 mM
Na Hypoxanthine	2.39 mg/L
Lipoic Acid	0.105
Sodium Putrescine-2HCL	0.081
Sodium Pyruvate	55.0
Sodium Selenite	0.0067
Ethanolamine	20uM
Ferric Citrate	0.122
Methyl-B-Cyclodextrin complexed with Linoleic Acid	41.70
Methyl-B-Cyclodextrin complexed with Oleic Acid	33.33
Methyl-B-Cyclodextrin complexed with Retinal Acetate	10

5

Adjust osmolarity to 327 mOsm

Example 12: Construction of GAS Reporter Construct

One signal transduction pathway involved in the differentiation and proliferation of cells is called the Jaks-STATs pathway. Activated proteins in the Jaks-STATs pathway bind to gamma activation site "GAS" elements or interferon-sensitive responsive element ("ISRE"), located in the promoter of many genes. The binding of a protein to these elements alter the expression of the associated gene.

GAS and ISRE elements are recognized by a class of transcription factors called Signal Transducers and Activators of Transcription, or "STATs." There are six members of the STATs family. Stat1 and Stat3 are present in many cell types, as is Stat2 (as response to IFN-alpha is widespread). Stat4 is more restricted and is not in many cell types though it has been found in T helper class I, cells after treatment with IL-12. Stat5 was originally called mammary growth factor, but has been found at higher concentrations in other cells including myeloid cells. It can be activated in tissue culture cells by many cytokines.

The STATs are activated to translocate from the cytoplasm to the nucleus upon tyrosine phosphorylation by a set of kinases known as the Janus Kinase ("Jaks") family. Jaks represent a distinct family of soluble tyrosine kinases and include Tyk2, Jak1, Jak2, and Jak3. These kinases display significant sequence similarity and are generally catalytically inactive in resting cells.

The Jaks are activated by a wide range of receptors summarized in the Table below. (Adapted from review by Schidler and Darnell, Ann. Rev. Biochem. 64:621-51 (1995).) A cytokine receptor family, capable of activating Jaks, is divided into two groups: (a) Class 1 includes receptors for IL-2, IL-3, IL-4, IL-6, IL-7, IL-9, IL-11, IL-12, IL-15, Epo, PRL, GH, G-CSF, GM-CSF, LIF, CNTF, and thrombopoietin; and (b) Class 2 includes IFN-a, IFN-g, and IL-10. The Class 1 receptors share a conserved cysteine motif (a set of four conserved cysteines and one tryptophan) and a WSXWS motif (a membrane proximal region encoding Trp-Ser-Xxx-Trp-Ser (SEQ ID NO:2)).

Thus, on binding of a ligand to a receptor, Jaks are activated, which in turn activate STATs, which then translocate and bind to GAS elements. This entire process is encompassed in the Jaks-STATs signal transduction pathway.

Therefore, activation of the Jaks-STATs pathway, reflected by the binding of the GAS or the ISRE element, can be used to indicate proteins involved in the proliferation and differentiation of cells. For example, growth factors and cytokines are known to activate the Jaks-STATs pathway. (See Table below.) Thus, by using GAS elements linked to reporter molecules, activators of the Jaks-STATs pathway can be identified.

	<u>ISRE</u> <u>Ligand</u>	<u>JAKs</u>				<u>STATs</u>	<u>GAS(elements) or</u>
		<u>tyk2</u>	<u>Jak1</u>	<u>Jak2</u>	<u>Jak3</u>		
5	<u>IFN family</u>						
	IFN-a/B	+	+	-	-	1,2,3	ISRE
	IFN-g		+	+	-	1	GAS
	(IRF1>Lys6>IFP)						
	IL-10	+	?	?	-	1,3	
10	<u>gp130 family</u>						
	IL-6 (Pleiotrohic)	+	+	+	?	1,3	GAS
	(IRF1>Lys6>IFP)						
	IL-11(Pleiotrohic)	?	+	?	?	1,3	
15	OnM(Pleiotrohic)	?	+	+	?	1,3	
	LIF(Pleiotrohic)	?	+	+	?	1,3	
	CNTF(Pleiotrohic)	-/+	+	+	?	1,3	
	G-CSF(Pleiotrohic)	?	+	?	?	1,3	
	IL-12(Pleiotrohic)	+	-	+	+	1,3	
20	<u>g-C family</u>						
	IL-2 (lymphocytes)	-	+	-	+	1,3,5	GAS
	IL-4 (lymph/myeloid)	-	+	-	+	6	GAS (IRF1 = IFP
	>>Ly6)(IgH)						
25	IL-7 (lymphocytes)	-	+	-	+	5	GAS
	IL-9 (lymphocytes)	-	+	-	+	5	GAS
	IL-13 (lymphocyte)	-	+	?	?	6	GAS
	IL-15	?	+	?	+	5	GAS
30	<u>gp140 family</u>						
	IL-3 (myeloid)	-	-	+	-	5	GAS
	(IRF1>IFP>>Ly6)						
	IL-5 (myeloid)	-	-	+	-	5	GAS
	GM-CSF (myeloid)	-	-	+	-	5	GAS
35	<u>Growth hormone family</u>						
	GH	?	-	+	-	5	
	PRL	?	+/-	+	-	1,3,5	
	EPO	?	-	+	-	5	GAS(B-
40	CAS>IRF1=IFP>>Ly6)						
	<u>Receptor Tyrosine Kinases</u>						
	EGF	?	+	+	-	1,3	GAS (IRF1)
45	PDGF	?	+	+	-	1,3	
	CSF-1	?	+	+	-	1,3	GAS (not IRF1)

To construct a synthetic GAS containing promoter element, which is used in the Biological Assays described in Examples 13-14, a PCR based strategy is employed to generate a GAS-SV40 promoter sequence. The 5' primer contains four tandem copies of the GAS binding site found in the IRF1 promoter and previously demonstrated to
5 bind STATs upon induction with a range of cytokines (Rothman et al., Immunity 1:457-468 (1994).), although other GAS or ISRE elements can be used instead. The 5' primer also contains 18bp of sequence complementary to the SV40 early promoter sequence and is flanked with an XhoI site. The sequence of the 5' primer is:
5':GCGCCTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCG
10 AAATGATTTCCCCGAAATATCTGCCATCTCAATTAG:3' (SEQ ID NO:3)

The downstream primer is complementary to the SV40 promoter and is flanked with a Hind III site: 5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO:4)

PCR amplification is performed using the SV40 promoter template present in
15 the B-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI/Hind III and subcloned into BLSK2-. (Stratagene.) Sequencing with forward and reverse primers confirms that the insert contains the following sequence:
5':CTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCGAAATG
20 ATTTCCCCGAAATATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCC
CTAACTCCGCCCATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCTCCGC
CCCATGGCTGACTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGC
CTCTGAGCTATTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTAGGCTTT
TGCAAAAAGCTT:3' (SEQ ID NO:5)

25

With this GAS promoter element linked to the SV40 promoter, a GAS:SEAP2 reporter construct is next engineered. Here, the reporter molecule is a secreted alkaline phosphatase, or "SEAP." Clearly, however, any reporter molecule can be instead of SEAP, in this or in any of the other Examples. Well known reporter molecules that can
30 be used instead of SEAP include chloramphenicol acetyltransferase (CAT), luciferase, alkaline phosphatase, B-galactosidase, green fluorescent protein (GFP), or any protein detectable by an antibody.

The above sequence confirmed synthetic GAS-SV40 promoter element is subcloned into the pSEAP-Promoter vector obtained from Clontech using HindIII and
35 XhoI, effectively replacing the SV40 promoter with the amplified GAS:SV40 promoter element, to create the GAS-SEAP vector. However, this vector does not contain a

neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

Thus, in order to generate mammalian stable cell lines expressing the GAS-SEAP reporter, the GAS-SEAP cassette is removed from the GAS-SEAP vector using
5 SalI and NotI, and inserted into a backbone vector containing the neomycin resistance gene, such as pGFP-1 (Clontech), using these restriction sites in the multiple cloning site, to create the GAS-SEAP/Neo vector. Once this vector is transfected into mammalian cells, this vector can then be used as a reporter molecule for GAS binding as described in Examples 13-14.

10 Other constructs can be made using the above description and replacing GAS with a different promoter sequence. For example, construction of reporter molecules containing NFK-B and EGR promoter sequences are described in Examples 15 and 16. However, many other promoters can be substituted using the protocols described in these Examples. For instance, SRE, IL-2, NFAT, or Osteocalcin promoters can be
15 substituted, alone or in combination (e.g., GAS/NF-KB/EGR, GAS/NF-KB, IL-2/NFAT, or NF-KB/GAS). Similarly, other cell lines can be used to test reporter construct activity, such as HELA (epithelial), HUVEC (endothelial), Reh (B-cell), Saos-2 (osteoblast), HUVAC (aortic), or Cardiomyocyte.

20 **Example 13: High-Throughput Screening Assay for T-cell Activity.**

The following protocol is used to assess T-cell activity by identifying factors, such as growth factors and cytokines, that may proliferate or differentiate T-cells. T-cell activity is assessed using the GAS/SEAP/Neo construct produced in Example 12. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS
25 signal transduction pathway. The T-cell used in this assay is Jurkat T-cells (ATCC Accession No. TIB-152), although Molt-3 cells (ATCC Accession No. CRL-1552) and Molt-4 cells (ATCC Accession No. CRL-1582) cells can also be used.

Jurkat T-cells are lymphoblastic CD4+ Th1 helper cells. In order to generate stable cell lines, approximately 2 million Jurkat cells are transfected with the GAS-
30 SEAP/neo vector using DMRIE-C (Life Technologies)(transfection procedure described below). The transfected cells are seeded to a density of approximately 20,000 cells per well and transfectants resistant to 1 mg/ml gentamicin selected. Resistant colonies are expanded and then tested for their response to increasing concentrations of interferon gamma. The dose response of a selected clone is demonstrated.

35 Specifically, the following protocol will yield sufficient cells for 75 wells containing 200 ul of cells. Thus, it is either scaled up, or performed in multiple to generate sufficient cells for multiple 96 well plates. Jurkat cells are maintained in RPMI

+ 10% serum with 1% Pen-Strep. Combine 2.5 mls of OPTI-MEM (Life Technologies) with 10 ug of plasmid DNA in a T25 flask. Add 2.5 ml OPTI-MEM containing 50 ul of DMRIE-C and incubate at room temperature for 15-45 mins.

During the incubation period, count cell concentration, spin down the required number of cells (10^7 per transfection), and resuspend in OPTI-MEM to a final concentration of 10^7 cells/ml. Then add 1ml of 1×10^7 cells in OPTI-MEM to T25 flask and incubate at 37°C for 6 hrs. After the incubation, add 10 ml of RPMI + 15% serum.

The Jurkat:GAS-SEAP stable reporter lines are maintained in RPMI + 10% serum, 1 mg/ml Genticin, and 1% Pen-Strep. These cells are treated with supernatants containing a polypeptide as produced by the protocol described in Example 11.

On the day of treatment with the supernatant, the cells should be washed and resuspended in fresh RPMI + 10% serum to a density of 500,000 cells per ml. The exact number of cells required will depend on the number of supernatants being screened. For one 96 well plate, approximately 10 million cells (for 10 plates, 100 million cells) are required.

Transfer the cells to a triangular reservoir boat, in order to dispense the cells into a 96 well dish, using a 12 channel pipette. Using a 12 channel pipette, transfer 200 ul of cells into each well (therefore adding 100, 000 cells per well).

After all the plates have been seeded, 50 ul of the supernatants are transferred directly from the 96 well plate containing the supernatants into each well using a 12 channel pipette. In addition, a dose of exogenous interferon gamma (0.1, 1.0, 10 ng) is added to wells H9, H10, and H11 to serve as additional positive controls for the assay.

The 96 well dishes containing Jurkat cells treated with supernatants are placed in an incubator for 48 hrs (note: this time is variable between 48-72 hrs). 35 ul samples from each well are then transferred to an opaque 96 well plate using a 12 channel pipette. The opaque plates should be covered (using sellophene covers) and stored at -20°C until SEAP assays are performed according to Example 17. The plates containing the remaining treated cells are placed at 4°C and serve as a source of material for repeating the assay on a specific well if desired.

As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate Jurkat T cells. Over 30 fold induction is typically observed in the positive control wells.

Example 14: High-Throughput Screening Assay Identifying Myeloid Activity

The following protocol is used to assess myeloid activity by identifying factors, such as growth factors and cytokines, that may proliferate or differentiate myeloid cells.

- 5 Myeloid cell activity is assessed using the GAS/SEAP/Neo construct produced in Example 12. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The myeloid cell used in this assay is U937, a pre-monocyte cell line, although TF-1, HL60, or KG1 can be used.

- 10 To transiently transfect U937 cells with the GAS/SEAP/Neo construct produced in Example 12, a DEAE-Dextran method (Kharbanda et. al., 1994, Cell Growth & Differentiation, 5:259-265) is used. First, harvest 2×10^7 U937 cells and wash with PBS. The U937 cells are usually grown in RPMI 1640 medium containing 10% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 mg/ml streptomycin.

- 15 Next, suspend the cells in 1 ml of 20 mM Tris-HCl (pH 7.4) buffer containing 0.5 mg/ml DEAE-Dextran, 8 ug GAS-SEAP2 plasmid DNA, 140 mM NaCl, 5 mM KCl, 375 uM $\text{Na}_2\text{HPO}_4 \cdot 7\text{H}_2\text{O}$, 1 mM MgCl_2 , and 675 uM CaCl_2 . Incubate at 37°C for 45 min.

- 20 Wash the cells with RPMI 1640 medium containing 10% FBS and then resuspend in 10 ml complete medium and incubate at 37°C for 36 hr.

The GAS-SEAP/U937 stable cells are obtained by growing the cells in 400 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 400 ug/ml G418 for couple of passages.

- 25 These cells are tested by harvesting 1×10^8 cells (this is enough for ten 96-well plates assay) and wash with PBS. Suspend the cells in 200 ml above described growth medium, with a final density of 5×10^5 cells/ml. Plate 200 ul cells per well in the 96-well plate (or 1×10^5 cells/well).

- 30 Add 50 ul of the supernatant prepared by the protocol described in Example 11. Incubate at 37°C for 48 to 72 hr. As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate U937 cells. Over 30 fold induction is typically observed in the positive control wells. SEAP assay the supernatant according to the protocol described in Example 17.

Example 15: High-Throughput Screening Assay Identifying Neuronal Activity.

When cells undergo differentiation and proliferation, a group of genes are activated through many different signal transduction pathways. One of these genes,
5 EGR1 (early growth response gene 1), is induced in various tissues and cell types upon activation. The promoter of EGR1 is responsible for such induction. Using the EGR1 promoter linked to reporter molecules, activation of cells can be assessed.

Particularly, the following protocol is used to assess neuronal activity in PC12 cell lines. PC12 cells (rat phenochromocytoma cells) are known to proliferate and/or
10 differentiate by activation with a number of mitogens, such as TPA (tetradecanoyl phorbol acetate), NGF (nerve growth factor), and EGF (epidermal growth factor). The EGR1 gene expression is activated during this treatment. Thus, by stably transfecting PC12 cells with a construct containing an EGR promoter linked to SEAP reporter, activation of PC12 cells can be assessed.

15 The EGR/SEAP reporter construct can be assembled by the following protocol. The EGR-1 promoter sequence (-633 to +1)(Sakamoto K et al., Oncogene 6:867-871 (1991)) can be PCR amplified from human genomic DNA using the following primers:

20 5' GCGCTCGAGGGATGACAGCGATAGAACCCCGG -3' (SEQ ID NO:6)
5' GCGAAGCTTCGCGACTCCCCGGATCCGCCTC-3' (SEQ ID NO:7)

Using the GAS:SEAP/Neo vector produced in Example 12, EGR1 amplified product can then be inserted into this vector. Linearize the GAS:SEAP/Neo vector using restriction enzymes XhoI/HindIII, removing the GAS/SV40 stuffer. Restrict the
25 EGR1 amplified product with these same enzymes. Ligate the vector and the EGR1 promoter.

To prepare 96 well-plates for cell culture, two mls of a coating solution (1:30 dilution of collagen type I (Upstate Biotech Inc. Cat#08-115) in 30% ethanol (filter sterilized)) is added per one 10 cm plate or 50 ml per well of the 96-well plate, and
30 allowed to air dry for 2 hr.

PC12 cells are routinely grown in RPMI-1640 medium (Bio Whittaker) containing 10% horse serum (JRH BIOSCIENCES, Cat. # 12449-78P), 5% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 ug/ml streptomycin on a precoated 10 cm tissue culture dish. One to four split is done
35 every three to four days. Cells are removed from the plates by scraping and resuspended with pipetting up and down for more than 15 times.

Transfect the EGR/SEAP/Neo construct into PC12 using the Lipofectamine protocol described in Example 11. EGR-SEAP/PC12 stable cells are obtained by growing the cells in 300 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 300 ug/ml G418 for couple of passages.

To assay for neuronal activity, a 10 cm plate with cells around 70 to 80% confluent is screened by removing the old medium. Wash the cells once with PBS (Phosphate buffered saline). Then starve the cells in low serum medium (RPMI-1640 containing 1% horse serum and 0.5% FBS with antibiotics) overnight.

The next morning, remove the medium and wash the cells with PBS. Scrape off the cells from the plate, suspend the cells well in 2 ml low serum medium. Count the cell number and add more low serum medium to reach final cell density as 5×10^5 cells/ml.

Add 200 ul of the cell suspension to each well of 96-well plate (equivalent to 1×10^5 cells/well). Add 50 ul supernatant produced by Example 11, 37°C for 48 to 72 hr. As a positive control, a growth factor known to activate PC12 cells through EGR can be used, such as 50 ng/ul of Neuronal Growth Factor (NGF). Over fifty-fold induction of SEAP is typically seen in the positive control wells. SEAP assay the supernatant according to Example 17.

20

Example 16: High-Throughput Screening Assay for T-cell Activity

NF- κ B (Nuclear Factor κ B) is a transcription factor activated by a wide variety of agents including the inflammatory cytokines IL-1 and TNF, CD30 and CD40, lymphotoxin-alpha and lymphotoxin-beta, by exposure to LPS or thrombin, and by expression of certain viral gene products. As a transcription factor, NF- κ B regulates the expression of genes involved in immune cell activation, control of apoptosis (NF- κ B appears to shield cells from apoptosis), B and T-cell development, anti-viral and antimicrobial responses, and multiple stress responses.

In non-stimulated conditions, NF- κ B is retained in the cytoplasm with I- κ B (Inhibitor κ B). However, upon stimulation, I- κ B is phosphorylated and degraded, causing NF- κ B to shuttle to the nucleus, thereby activating transcription of target genes. Target genes activated by NF- κ B include IL-2, IL-6, GM-CSF, ICAM-1 and class I MHC.

Due to its central role and ability to respond to a range of stimuli, reporter constructs utilizing the NF- κ B promoter element are used to screen the supernatants produced in Example 11. Activators or inhibitors of NF- κ B would be useful in treating diseases. For example, inhibitors of NF- κ B could be used to treat those diseases related to the acute or chronic activation of NF- κ B, such as rheumatoid arthritis.

To construct a vector containing the NF- κ B promoter element, a PCR based strategy is employed. The upstream primer contains four tandem copies of the NF- κ B binding site (GGGGACTTTCCC) (SEQ ID NO:8), 18 bp of sequence complementary to the 5' end of the SV40 early promoter sequence, and is flanked with an XhoI site:
5':GCGGCCTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGGAC
TTTCCATCCTGCCATCTCAATTAG:3' (SEQ ID NO:9)

The downstream primer is complementary to the 3' end of the SV40 promoter and is flanked with a Hind III site:

5':GCGGCAAGCTTTTGGCAAAGCCTAGGC:3' (SEQ ID NO:4)

PCR amplification is performed using the SV40 promoter template present in the pB-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI and Hind III and subcloned into BLSK2-. (Stratagene) Sequencing with the T7 and T3 primers confirms the insert contains the following sequence:

5':CTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGGACTTTCC
ATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCCCA
TCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCTCCGCCCCATGGCTGACT
AATTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGCCTCTGAGCTATTC
CAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGC AAAAAGCTT:
3' (SEQ ID NO:10)

Next, replace the SV40 minimal promoter element present in the pSEAP2-promoter plasmid (Clontech) with this NF- κ B/SV40 fragment using XhoI and HindIII. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

In order to generate stable mammalian cell lines, the NF- κ B/SV40/SEAP cassette is removed from the above NF- κ B/SEAP vector using restriction enzymes SalI and NotI, and inserted into a vector containing neomycin resistance. Particularly, the

NF- κ B/SV40/SEAP cassette was inserted into pGFP-1 (Clontech), replacing the GFP gene, after restricting pGFP-1 with Sall and NotI.

Once NF- κ B/SV40/SEAP/Neo vector is created, stable Jurkat T-cells are created and maintained according to the protocol described in Example 13. Similarly, the method for assaying supernatants with these stable Jurkat T-cells is also described in Example 13. As a positive control, exogenous TNF alpha (0.1, 1, 10 ng) is added to wells H9, H10, and H11, with a 5-10 fold activation typically observed.

Example 17: Assay for SEAP Activity

As a reporter molecule for the assays described in Examples 13-16, SEAP activity is assayed using the Tropix Phospho-light Kit (Cat. BP-400) according to the following general procedure. The Tropix Phospho-light Kit supplies the Dilution, Assay, and Reaction Buffers used below.

Prime a dispenser with the 2.5x Dilution Buffer and dispense 15 μ l of 2.5x dilution buffer into Optiplates containing 35 μ l of a supernatant. Seal the plates with a plastic sealer and incubate at 65°C for 30 min. Separate the Optiplates to avoid uneven heating.

Cool the samples to room temperature for 15 minutes. Empty the dispenser and prime with the Assay Buffer. Add 50 μ l Assay Buffer and incubate at room temperature 5 min. Empty the dispenser and prime with the Reaction Buffer (see the table below). Add 50 μ l Reaction Buffer and incubate at room temperature for 20 minutes. Since the intensity of the chemiluminescent signal is time dependent, and it takes about 10 minutes to read 5 plates on luminometer, one should treat 5 plates at each time and start the second set 10 minutes later.

Read the relative light unit in the luminometer. Set H12 as blank, and print the results. An increase in chemiluminescence indicates reporter activity.

Reaction Buffer Formulation:

# of plates	Rxn buffer diluent (ml)	CSPD (ml)
10	60	3
11	65	3.25
12	70	3.5
13	75	3.75
14	80	4

15	85	4.25
16	90	4.5
17	95	4.75
18	100	5
19	105	5.25
20	110	5.5
21	115	5.75
22	120	6
23	125	6.25
24	130	6.5
25	135	6.75
26	140	7
27	145	7.25
28	150	7.5
29	155	7.75
30	160	8
31	165	8.25
32	170	8.5
33	175	8.75
34	180	9
35	185	9.25
36	190	9.5
37	195	9.75
38	200	10
39	205	10.25
40	210	10.5
41	215	10.75
42	220	11
43	225	11.25
44	230	11.5
45	235	11.75
46	240	12
47	245	12.25
48	250	12.5
49	255	12.75
50	260	13

Example 18: High-Throughput Screening Assay Identifying Changes in Small Molecule Concentration and Membrane Permeability

Binding of a ligand to a receptor is known to alter intracellular levels of small molecules, such as calcium, potassium, sodium, and pH, as well as alter membrane potential. These alterations can be measured in an assay to identify supernatants which bind to receptors of a particular cell. Although the following protocol describes an assay for calcium, this protocol can easily be modified to detect changes in potassium, sodium, pH, membrane potential, or any other small molecule which is detectable by a fluorescent probe.

The following assay uses Fluorometric Imaging Plate Reader ("FLIPR") to measure changes in fluorescent molecules (Molecular Probes) that bind small molecules. Clearly, any fluorescent molecule detecting a small molecule can be used instead of the calcium fluorescent molecule, fluo-3, used here.

For adherent cells, seed the cells at 10,000 -20,000 cells/well in a Co-star black 96-well plate with clear bottom. The plate is incubated in a CO₂ incubator for 20 hours. The adherent cells are washed two times in Biotek washer with 200 ul of HBSS (Hank's Balanced Salt Solution) leaving 100 ul of buffer after the final wash.

A stock solution of 1 mg/ml fluo-3 is made in 10% pluronic acid DMSO. To load the cells with fluo-3, 50 ul of 12 ug/ml fluo-3 is added to each well. The plate is incubated at 37°C in a CO₂ incubator for 60 min. The plate is washed four times in the Biotek washer with HBSS leaving 100 ul of buffer.

For non-adherent cells, the cells are spun down from culture media. Cells are re-suspended to 2-5x10⁶ cells/ml with HBSS in a 50-ml conical tube. 4 ul of 1 mg/ml fluo-3 solution in 10% pluronic acid DMSO is added to each ml of cell suspension. The tube is then placed in a 37°C water bath for 30-60 min. The cells are washed twice with HBSS, resuspended to 1x10⁶ cells/ml, and dispensed into a microplate, 100 ul/well. The plate is centrifuged at 1000 rpm for 5 min. The plate is then washed once in Denley CellWash with 200 ul, followed by an aspiration step to 100 ul final volume.

For a non-cell based assay, each well contains a fluorescent molecule, such as fluo-3. The supernatant is added to the well, and a change in fluorescence is detected.

To measure the fluorescence of intracellular calcium, the FLIPR is set for the following parameters: (1) System gain is 300-800 mW; (2) Exposure time is 0.4 second; (3) Camera F/stop is F/2; (4) Excitation is 488 nm; (5) Emission is 530 nm; and (6) Sample addition is 50 ul. Increased emission at 530 nm indicates an extracellular

signaling even which has resulted in an increase in the intracellular Ca^{++} concentration.

Example 19: High-Throughput Screening Assay Identifying Tyrosine Kinase Activity

5 The Protein Tyrosine Kinases (PTK) represent a diverse group of transmembrane and cytoplasmic kinases. Within the Receptor Protein Tyrosine Kinase (RPTK) group are receptors for a range of mitogenic and metabolic growth factors including the PDGF, FGF, EGF, NGF, HGF and Insulin receptor subfamilies. In
10 addition there are a large family of RPTKs for which the corresponding ligand is unknown. Ligands for RPTKs include mainly secreted small proteins, but also membrane-bound and extracellular matrix proteins.

Activation of RPTK by ligands involves ligand-mediated receptor dimerization, resulting in transphosphorylation of the receptor subunits and activation of the
15 cytoplasmic tyrosine kinases. The cytoplasmic tyrosine kinases include receptor associated tyrosine kinases of the src-family (e.g., src, yes, lck, lyn, fyn) and non-receptor linked and cytosolic protein tyrosine kinases, such as the Jak family, members of which mediate signal transduction triggered by the cytokine superfamily of receptors (e.g., the Interleukins, Interferons, GM-CSF, and Leptin).

20 Because of the wide range of known factors capable of stimulating tyrosine kinase activity, the identification of novel human secreted proteins capable of activating tyrosine kinase signal transduction pathways are of interest. Therefore, the following protocol is designed to identify those novel human secreted proteins capable of activating the tyrosine kinase signal transduction pathways.

25 Seed target cells (e.g., primary keratinocytes) at a density of approximately 25,000 cells per well in a 96 well Loprodyne Silent Screen Plates purchased from Nalge Nunc (Naperville, IL). The plates are sterilized with two 30 minute rinses with 100% ethanol, rinsed with water and dried overnight. Some plates are coated for 2 hr with 100 ml of cell culture grade type I collagen (50 mg/ml), gelatin (2%) or polylysine
30 (50 mg/ml), all of which can be purchased from Sigma Chemicals (St. Louis, MO) or 10% Matrigel purchased from Becton Dickinson (Bedford, MA), or calf serum, rinsed with PBS and stored at 4°C. Cell growth on these plates is assayed by seeding 5,000 cells/well in growth medium and indirect quantitation of cell number through use of alamarBlue as described by the manufacturer Alamar Biosciences, Inc. (Sacramento,
35 CA) after 48 hr. Falcon plate covers #3071 from Becton Dickinson (Bedford, MA) are

used to cover the Loprodyne Silent Screen Plates. Falcon Microtest III cell culture plates can also be used in some proliferation experiments.

To prepare extracts, A431 cells are seeded onto the nylon membranes of Loprodyne plates (20,000/200ml/well) and cultured overnight in complete medium.

- 5 Cells are quiesced by incubation in serum-free basal medium for 24 hr. After 5-20 minutes treatment with EGF (60ng/ml) or 50 ul of the supernatant produced in Example 11, the medium was removed and 100 ml of extraction buffer ((20 mM HEPES pH 7.5, 0.15 M NaCl, 1% Triton X-100, 0.1% SDS, 2 mM Na₃VO₄, 2 mM Na₄P₂O₇ and a cocktail of protease inhibitors (# 1836170) obtained from Boehringer Mannheim
- 10 (Indianapolis, IN) is added to each well and the plate is shaken on a rotating shaker for 5 minutes at 4°C. The plate is then placed in a vacuum transfer manifold and the extract filtered through the 0.45 mm membrane bottoms of each well using house vacuum. Extracts are collected in a 96-well catch/assay plate in the bottom of the vacuum manifold and immediately placed on ice. To obtain extracts clarified by centrifugation,
- 15 the content of each well, after detergent solubilization for 5 minutes, is removed and centrifuged for 15 minutes at 4°C at 16,000 x g.

Test the filtered extracts for levels of tyrosine kinase activity. Although many methods of detecting tyrosine kinase activity are known, one method is described here.

- Generally, the tyrosine kinase activity of a supernatant is evaluated by
- 20 determining its ability to phosphorylate a tyrosine residue on a specific substrate (a biotinylated peptide). Biotinylated peptides that can be used for this purpose include PSK1 (corresponding to amino acids 6-20 of the cell division kinase cdc2-p34) and PSK2 (corresponding to amino acids 1-17 of gastrin). Both peptides are substrates for a range of tyrosine kinases and are available from Boehringer Mannheim.

- 25 The tyrosine kinase reaction is set up by adding the following components in order. First, add 10ul of 5uM Biotinylated Peptide, then 10ul ATP/Mg₂₊ (5mM ATP/50mM MgCl₂), then 10ul of 5x Assay Buffer (40mM imidazole hydrochloride, pH7.3, 40 mM beta-glycerophosphate, 1mM EGTA, 100mM MgCl₂, 5 mM MnCl₂, 0.5 mg/ml BSA), then 5ul of Sodium Vanadate(1mM), and then 5ul of water. Mix the
- 30 components gently and preincubate the reaction mix at 30°C for 2 min. Initiate the reaction by adding 10ul of the control enzyme or the filtered supernatant.

The tyrosine kinase assay reaction is then terminated by adding 10 ul of 120mM EDTA and place the reactions on ice.

- Tyrosine kinase activity is determined by transferring 50 ul aliquot of reaction
- 35 mixture to a microtiter plate (MTP) module and incubating at 37°C for 20 min. This

allows the streptavidin coated 96 well plate to associate with the biotinylated peptide. Wash the MTP module with 300ul/well of PBS four times. Next add 75 ul of anti-phosphotyrosine antibody conjugated to horse radish peroxidase(anti-P-Tyr-
5 POD(0.5u/ml)) to each well and incubate at 37°C for one hour. Wash the well as above.

Next add 100ul of peroxidase substrate solution (Boehringer Mannheim) and incubate at room temperature for at least 5 mins (up to 30 min). Measure the absorbance of the sample at 405 nm by using ELISA reader. The level of bound
10 peroxidase activity is quantitated using an ELISA reader and reflects the level of tyrosine kinase activity.

Example 20: High-Throughput Screening Assay Identifying Phosphorylation Activity

As a potential alternative and/or compliment to the assay of protein tyrosine
15 kinase activity described in Example 19, an assay which detects activation (phosphorylation) of major intracellular signal transduction intermediates can also be used. For example, as described below one particular assay can detect tyrosine phosphorylation of the Erk-1 and Erk-2 kinases. However, phosphorylation of other
20 molecules, such as Raf, JNK, p38 MAP, Map kinase kinase (MEK), MEK kinase, Src, Muscle specific kinase (MuSK), IRAK, Tec, and Janus, as well as any other phosphoserine, phosphotyrosine, or phosphothreonine molecule, can be detected by substituting these molecules for Erk-1 or Erk-2 in the following assay.

Specifically, assay plates are made by coating the wells of a 96-well ELISA
25 plate with 0.1ml of protein G (1ug/ml) for 2 hr at room temp, (RT). The plates are then rinsed with PBS and blocked with 3% BSA/PBS for 1 hr at RT. The protein G plates are then treated with 2 commercial monoclonal antibodies (100ng/well) against Erk-1 and Erk-2 (1 hr at RT) (Santa Cruz Biotechnology). (To detect other molecules, this
30 step can easily be modified by substituting a monoclonal antibody detecting any of the above described molecules.) After 3-5 rinses with PBS, the plates are stored at 4°C until use.

A431 cells are seeded at 20,000/well in a 96-well Loprodyne filterplate and cultured overnight in growth medium. The cells are then starved for 48 hr in basal medium (DMEM) and then treated with EGF (6ng/well) or 50 ul of the supernatants
35 obtained in Example 11 for 5-20 minutes. The cells are then solubilized and extracts filtered directly into the assay plate.

After incubation with the extract for 1 hr at RT, the wells are again rinsed. As a positive control, a commercial preparation of MAP kinase (10ng/well) is used in place of A431 extract. Plates are then treated with a commercial polyclonal (rabbit) antibody (1ug/ml) which specifically recognizes the phosphorylated epitope of the Erk-1 and Erk-2 kinases (1 hr at RT). This antibody is biotinylated by standard procedures. The bound polyclonal antibody is then quantitated by successive incubations with Europium-streptavidin and Europium fluorescence enhancing reagent in the Wallac DELFIA instrument (time-resolved fluorescence). An increased fluorescent signal over background indicates a phosphorylation.

Example 21: Method of Determining Alterations in a Gene Corresponding to a Polynucleotide

RNA isolated from entire families or individual patients presenting with a phenotype of interest (such as a disease) is be isolated. cDNA is then generated from these RNA samples using protocols known in the art. (See, Sambrook.) The cDNA is then used as a template for PCR, employing primers surrounding regions of interest in SEQ ID NO:X. Suggested PCR conditions consist of 35 cycles at 95°C for 30 seconds; 60-120 seconds at 52-58°C; and 60-120 seconds at 70°C, using buffer solutions described in Sidransky, D., et al., Science 252:706 (1991).

PCR products is then sequenced using primers labeled at their 5' end with T4 polynucleotide kinase, employing SequiTherm Polymerase. (Epicentre Technologies). The intron-exon borders of selected exons is also determined and genomic PCR products analyzed to confirm the results. PCR products harboring suspected mutations is then cloned and sequenced to validate the results of the direct sequencing.

PCR products is cloned into T-tailed vectors as described in Holton, T.A. and Graham, M.W., Nucleic Acids Research, 19:1156 (1991) and sequenced with T7 polymerase (United States Biochemical). Affected individuals is identified by mutations not present in unaffected individuals.

Genomic rearrangements are also observed as a method of determining alterations in a gene corresponding to a polynucleotide. Genomic clones isolated according to Example 2 are nick-translated with digoxigenindeoxy-uridine 5'-triphosphate (Boehringer Mannheim), and FISH performed as described in Johnson, Cg. et al., Methods Cell Biol. 35:73-99 (1991). Hybridization with the labeled probe is carried out using a vast excess of human cot-1 DNA for specific hybridization to the corresponding genomic locus.

Chromosomes are counterstained with 4,6-diamino-2-phenylidole and propidium iodide, producing a combination of C- and R-bands. Aligned images for precise mapping are obtained using a triple-band filter set (Chroma Technology, Brattleboro, VT) in combination with a cooled charge-coupled device camera
5 (Photometrics, Tucson, AZ) and variable excitation wavelength filters. (Johnson, Cv. et al., Genet. Anal. Tech. Appl., 8:75 (1991).) Image collection, analysis and chromosomal fractional length measurements are performed using the ISee Graphical Program System. (Inovision Corporation, Durham, NC.) Chromosome alterations of the genomic region hybridized by the probe are identified as insertions, deletions, and
10 translocations. These alterations are used as a diagnostic marker for an associated disease.

Example 22: Method of Detecting Abnormal Levels of a Polypeptide in a Biological Sample

15 A polypeptide of the present invention can be detected in a biological sample, and if an increased or decreased level of the polypeptide is detected, this polypeptide is a marker for a particular phenotype. Methods of detection are numerous, and thus, it is understood that one skilled in the art can modify the following assay to fit their particular needs.

20 For example, antibody-sandwich ELISAs are used to detect soluble polypeptides in a sample, preferably a biological sample. Wells of a microtiter plate are coated with specific antibodies, at a final concentration of 0.2 to 10 ug/ml. The antibodies are either monoclonal or polyclonal and are produced by the method described in Example 10. The wells are blocked so that non-specific binding of the
25 polypeptide to the well is reduced.

The coated wells are then incubated for > 2 hours at RT with a sample containing the polypeptide. Preferably, serial dilutions of the sample should be used to validate results. The plates are then washed three times with deionized or distilled water to remove unbounded polypeptide.

30 Next, 50 ul of specific antibody-alkaline phosphatase conjugate, at a concentration of 25-400 ng, is added and incubated for 2 hours at room temperature. The plates are again washed three times with deionized or distilled water to remove unbounded conjugate.

35 Add 75 ul of 4-methylumbelliferyl phosphate (MUP) or p-nitrophenyl phosphate (NPP) substrate solution to each well and incubate 1 hour at room temperature. Measure the reaction by a microtiter plate reader. Prepare a standard curve, using serial dilutions of a control sample, and plot polypeptide concentration on

the X-axis (log scale) and fluorescence or absorbance of the Y-axis (linear scale). Interpolate the concentration of the polypeptide in the sample using the standard curve.

Example 23: Formulating a Polypeptide

5 The secreted polypeptide composition will be formulated and dosed in a fashion consistent with good medical practice, taking into account the clinical condition of the individual patient (especially the side effects of treatment with the secreted polypeptide alone), the site of delivery, the method of administration, the scheduling of administration, and other factors known to practitioners. The "effective amount" for
10 purposes herein is thus determined by such considerations.

 As a general proposition, the total pharmaceutically effective amount of secreted polypeptide administered parenterally per dose will be in the range of about 1 $\mu\text{g/kg/day}$ to 10 mg/kg/day of patient body weight, although, as noted above, this will be subject to therapeutic discretion. More preferably, this dose is at least 0.01 mg/kg/day , and
15 most preferably for humans between about 0.01 and 1 mg/kg/day for the hormone. If given continuously, the secreted polypeptide is typically administered at a dose rate of about 1 $\mu\text{g/kg/hour}$ to about 50 $\mu\text{g/kg/hour}$, either by 1-4 injections per day or by continuous subcutaneous infusions, for example, using a mini-pump. An intravenous bag solution may also be employed. The length of treatment needed to observe changes
20 and the interval following treatment for responses to occur appears to vary depending on the desired effect.

 Pharmaceutical compositions containing the secreted protein of the invention are administered orally, rectally, parenterally, intracisternally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal
25 patch), buccally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any type. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

30 The secreted polypeptide is also suitably administered by sustained-release systems. Suitable examples of sustained-release compositions include semi-permeable polymer matrices in the form of shaped articles, e.g., films, or microcapsules. Sustained-release matrices include polylactides (U.S. Pat. No. 3,773,919, EP 58,481), copolymers of L-glutamic acid and gamma-ethyl-L-glutamate (Sidman, U. et al.,
35 Biopolymers 22:547-556 (1983)), poly (2- hydroxyethyl methacrylate) (R. Langer et al., J. Biomed. Mater. Res. 15:167-277 (1981), and R. Langer, Chem. Tech. 12:98-105 (1982)), ethylene vinyl acetate (R. Langer et al.) or poly-D- (-)-3-hydroxybutyric

acid (EP 133,988). Sustained-release compositions also include liposomally entrapped polypeptides. Liposomes containing the secreted polypeptide are prepared by methods known per se: DE 3,218,121; Epstein et al., Proc. Natl. Acad. Sci. USA 82:3688-3692 (1985); Hwang et al., Proc. Natl. Acad. Sci. USA 77:4030-4034 (1980); EP 52,322; EP 36,676; EP 88,046; EP 143,949; EP 142,641; Japanese Pat. Appl. 83-118008; U.S. Pat. Nos. 4,485,045 and 4,544,545; and EP 102,324. Ordinarily, the liposomes are of the small (about 200-800 Angstroms) unilamellar type in which the lipid content is greater than about 30 mol. percent cholesterol, the selected proportion being adjusted for the optimal secreted polypeptide therapy.

For parenteral administration, in one embodiment, the secreted polypeptide is formulated generally by mixing it at the desired degree of purity, in a unit dosage injectable form (solution, suspension, or emulsion), with a pharmaceutically acceptable carrier, i.e., one that is non-toxic to recipients at the dosages and concentrations employed and is compatible with other ingredients of the formulation. For example, the formulation preferably does not include oxidizing agents and other compounds that are known to be deleterious to polypeptides.

Generally, the formulations are prepared by contacting the polypeptide uniformly and intimately with liquid carriers or finely divided solid carriers or both. Then, if necessary, the product is shaped into the desired formulation. Preferably the carrier is a parenteral carrier, more preferably a solution that is isotonic with the blood of the recipient. Examples of such carrier vehicles include water, saline, Ringer's solution, and dextrose solution. Non-aqueous vehicles such as fixed oils and ethyl oleate are also useful herein, as well as liposomes.

The carrier suitably contains minor amounts of additives such as substances that enhance isotonicity and chemical stability. Such materials are non-toxic to recipients at the dosages and concentrations employed, and include buffers such as phosphate, citrate, succinate, acetic acid, and other organic acids or their salts; antioxidants such as ascorbic acid; low molecular weight (less than about ten residues) polypeptides, e.g., polyarginine or tripeptides; proteins, such as serum albumin, gelatin, or immunoglobulins; hydrophilic polymers such as polyvinylpyrrolidone; amino acids, such as glycine, glutamic acid, aspartic acid, or arginine; monosaccharides, disaccharides, and other carbohydrates including cellulose or its derivatives, glucose, manose, or dextrans; chelating agents such as EDTA; sugar alcohols such as mannitol or sorbitol; counterions such as sodium; and/or nonionic surfactants such as polysorbates, poloxamers, or PEG.

The secreted polypeptide is typically formulated in such vehicles at a concentration of about 0.1 mg/ml to 100 mg/ml, preferably 1-10 mg/ml, at a pH of

about 3 to 8. It will be understood that the use of certain of the foregoing excipients, carriers, or stabilizers will result in the formation of polypeptide salts.

Any polypeptide to be used for therapeutic administration can be sterile.

5 Sterility is readily accomplished by filtration through sterile filtration membranes (e.g., 0.2 micron membranes). Therapeutic polypeptide compositions generally are placed into a container having a sterile access port, for example, an intravenous solution bag or vial having a stopper pierceable by a hypodermic injection needle.

Polypeptides ordinarily will be stored in unit or multi-dose containers, for example, sealed ampoules or vials, as an aqueous solution or as a lyophilized
10 formulation for reconstitution. As an example of a lyophilized formulation, 10-ml vials are filled with 5 ml of sterile-filtered 1% (w/v) aqueous polypeptide solution, and the resulting mixture is lyophilized. The infusion solution is prepared by reconstituting the lyophilized polypeptide using bacteriostatic Water-for-Injection.

The invention also provides a pharmaceutical pack or kit comprising one or
15 more containers filled with one or more of the ingredients of the pharmaceutical compositions of the invention. Associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration. In addition, the polypeptides of the
20 present invention may be employed in conjunction with other therapeutic compounds.

Example 24: Method of Treating Decreased Levels of the Polypeptide

It will be appreciated that conditions caused by a decrease in the standard or normal expression level of a secreted protein in an individual can be treated by
25 administering the polypeptide of the present invention, preferably in the secreted form. Thus, the invention also provides a method of treatment of an individual in need of an increased level of the polypeptide comprising administering to such an individual a pharmaceutical composition comprising an amount of the polypeptide to increase the activity level of the polypeptide in such an individual.

30 For example, a patient with decreased levels of a polypeptide receives a daily dose 0.1-100 ug/kg of the polypeptide for six consecutive days. Preferably, the polypeptide is in the secreted form. The exact details of the dosing scheme, based on administration and formulation, are provided in Example 23.

Example 25: Method of Treating Increased Levels of the Polypeptide

Antisense technology is used to inhibit production of a polypeptide of the present invention. This technology is one example of a method of decreasing levels of a polypeptide, preferably a secreted form, due to a variety of etiologies, such as cancer.

5 For example, a patient diagnosed with abnormally increased levels of a polypeptide is administered intravenously antisense polynucleotides at 0.5, 1.0, 1.5, 2.0 and 3.0 mg/kg day for 21 days. This treatment is repeated after a 7-day rest period if the treatment was well tolerated. The formulation of the antisense polynucleotide is provided in Example 23.

Example 26: Method of Treatment Using Gene Therapy

One method of gene therapy transplants fibroblasts, which are capable of expressing a polypeptide, onto a patient. Generally, fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in tissue-culture medium and separated into small pieces. Small chunks of the tissue are placed on a wet surface of a tissue culture flask, approximately ten pieces are placed in each flask. The flask is turned upside down, closed tight and left at room temperature over night. After 24 hours at room temperature, the flask is inverted and the chunks of tissue remain fixed to the bottom of the flask and fresh media (e.g., Ham's F12 media, with 10% FBS, penicillin and streptomycin, is added. The flasks are then incubated at 37°C for approximately one week.

At this time, fresh media is added and subsequently changed every several days. After an additional two weeks in culture, a monolayer of fibroblasts emerge. The monolayer is trypsinized and scaled into larger flasks.

25 pMV-7 (Kirschmeier, P.T. et al., DNA, 7:219-25 (1988)), flanked by the long terminal repeats of the Moloney murine sarcoma virus, is digested with EcoRI and HindIII and subsequently treated with calf intestinal phosphatase. The linear vector is fractionated on agarose gel and purified, using glass beads.

The cDNA encoding a polypeptide of the present invention can be amplified using PCR primers which correspond to the 5' and 3' end sequences respectively as set forth in Example 1. Preferably, the 5' primer contains an EcoRI site and the 3' primer includes a HindIII site. Equal quantities of the Moloney murine sarcoma virus linear backbone and the amplified EcoRI and HindIII fragment are added together, in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The ligation mixture is then used to

transform bacteria HB101, which are then plated onto agar containing kanamycin for the purpose of confirming that the vector has the gene of interest properly inserted.

The amphotropic pA317 or GP+am12 packaging cells are grown in tissue culture to confluent density in Dulbecco's Modified Eagles Medium (DMEM) with 10% calf serum (CS), penicillin and streptomycin. The MSV vector containing the gene is then added to the media and the packaging cells transduced with the vector. The packaging cells now produce infectious viral particles containing the gene (the packaging cells are now referred to as producer cells).

Fresh media is added to the transduced producer cells, and subsequently, the media is harvested from a 10 cm plate of confluent producer cells. The spent media, containing the infectious viral particles, is filtered through a millipore filter to remove detached producer cells and this media is then used to infect fibroblast cells. Media is removed from a sub-confluent plate of fibroblasts and quickly replaced with the media from the producer cells. This media is removed and replaced with fresh media. If the titer of virus is high, then virtually all fibroblasts will be infected and no selection is required. If the titer is very low, then it is necessary to use a retroviral vector that has a selectable marker, such as neo or his. Once the fibroblasts have been efficiently infected, the fibroblasts are analyzed to determine whether protein is being produced.

The engineered fibroblasts are then transplanted onto the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads.

It will be clear that the invention may be practiced otherwise than as particularly described in the foregoing description and examples. Numerous modifications and variations of the present invention are possible in light of the above teachings and, therefore, are within the scope of the appended claims.

The entire disclosure of each document cited (including patents, patent applications, journal articles, abstracts, laboratory manuals, books, or other disclosures) in the Background of the Invention, Detailed Description, and Examples is hereby incorporated herein by reference.

(1) GENERAL INFORMATION:

- 5 (i) APPLICANT: Human Genome Sciences, Inc. et al.
- (ii) TITLE OF INVENTION: 186 Human Secreted Proteins
- 10 (iii) NUMBER OF SEQUENCES: 644
- (iv) CORRESPONDENCE ADDRESS:
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- 15 (B) STREET: 9410 Key West Avenue
- (C) CITY: Rockville
- (D) STATE: Maryland
- 20 (E) COUNTRY: USA
- (F) ZIP: 20850
- 25
- (v) COMPUTER READABLE FORM:
- (A) MEDIUM TYPE: Diskette, 3.50 inch, 1.4Mb storage
- 30 (B) COMPUTER: HP Vectra 486/33
- (C) OPERATING SYSTEM: MSDOS version 6.2
- 35 (D) SOFTWARE: ASCII Text
- (vi) CURRENT APPLICATION DATA:
- 40 (A) APPLICATION NUMBER:
- (B) FILING DATE: March 6, 1998
- 45 (C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:
- 50 (A) APPLICATION NUMBER:
- (B) FILING DATE:
- 55

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(C) REFERENCE/DOCKET NUMBER: PS002.PCT

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(B) TELEFAX: (301) 309-8439

(2) INFORMATION FOR SEQ ID NO: 1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 733 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

GGGATCCGGA	GCCCAAATCT	TCTGACAAAA	CTCACACATG	CCCACCGTGC	CCAGCACCTG	60
AATTCGAGGG	TGCACCGTCA	GTCTTCCTCT	TCCCCCAAA	ACCCAAGGAC	ACCCTCATGA	120
TCTCCCGGAC	TCCTGAGGTC	ACATGCGTGG	TGGTGGACGT	AAGCCACGAA	GACCCTGAGG	180
TCAAGTTCAA	CTGGTACGTG	GACGGCGTGG	AGGTGCATAA	TGCCAAGACA	AAGCCGCGGG	240
AGGAGCAGTA	CAACAGCACG	TACCGTGTGG	TCAGCGTCCT	CACCGTCCTG	CACCAGGACT	300
GGCTGAATGG	CAAGGAGTAC	AAGTGCAAGG	TCTCCAACAA	AGCCCTCCCA	ACCCCATCG	360
AGAAAACCAT	CTCCAAGCC	AAAGGGCAGC	CCCGAGAACC	ACAGGTGTAC	ACCCTGCCCC	420
CATCCCGGGA	TGAGCTGACC	AAGAACCAGG	TCAGCCTGAC	CTGCCTGGTC	AAAGGCTTCT	480
ATCCAAGCGA	CATCGCCGTG	GAGTGGGAGA	GCAATGGGCA	GCCGGAGAAC	AACTACAAGA	540
CCACGCCTCC	CGTGCTGGAC	TCCGACGGCT	CCTTCTTCCT	CTACAGCAAG	CTCACCGTGG	600
ACAAGAGCAG	GTGGCAGCAG	GGGAACGTCT	TCTCATGCTC	CGTGATGCAT	GAGGCTCTGC	660
ACAACCACTA	CACGCAGAAG	AGCCTCTCCC	TGTCCTCCGG	TAAATGAGTG	CGACGGCCGC	720
GACTCTAGAG	GAT					733

(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 5 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

10

Trp Ser Xaa Trp Ser
1 5

15

(2) INFORMATION FOR SEQ ID NO: 3:

(i) SEQUENCE CHARACTERISTICS:

- 20 (A) LENGTH: 86 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

GCGCCTCGAG ATTTCCTCGA AATCTAGATT TCCCCGAAAT GATTTCCCCG AAATGATTTC 60

30

CCCGAAATAT CTGCCATCTC AATTAG 86

35

(2) INFORMATION FOR SEQ ID NO: 4:

(i) SEQUENCE CHARACTERISTICS:

- 40 (A) LENGTH: 27 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

45

GCGGCAAGCT TTTTGCAAAG CCTAGGC 27

50

(2) INFORMATION FOR SEQ ID NO: 5:

(i) SEQUENCE CHARACTERISTICS:

- 55 (A) LENGTH: 271 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

60

CTCGAGATTT CCCCGAAATC TAGATTTCCT CGAAATGATT TCCCCGAAAT GATTTCCCCG 60

AAATATCTGC CATCTCAATT AGTCAGCAAC CATAGTCCCG CCCCTAACTC CGCCCATCCC 120
GCCCCTAACT CCGCCCAGTT CCGCCCATTTC TCCGCCCCAT GGCTGACTAA TTTTMTTAT 180
5 TTATGCAGAG GCCGAGGCCG CCTCGGCCCTC TGAGCTATTTC CAGAAGTAGT GAGGAGGCTT 240
TTTTGGAGGC CTAGGCTTTT GCAAAAAGCT T 271

10

(2) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS:
15 (A) LENGTH: 32 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

GCGCTCGAGG GATGACAGCG ATAGAACCCC GG 32

25

(2) INFORMATION FOR SEQ ID NO: 7:

(i) SEQUENCE CHARACTERISTICS:
30 (A) LENGTH: 31 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

GCGAAGCTTC GCGACTCCCC GGATCCGCCT C 31

40

(2) INFORMATION FOR SEQ ID NO: 8:

(i) SEQUENCE CHARACTERISTICS:
45 (A) LENGTH: 12 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

50

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

GGGGACTTTC CC 12

55

(2) INFORMATION FOR SEQ ID NO: 9:

60 (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 73 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

5

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

GCGGCCTCGA GGGGACTTTC CCGGGGACTT TCCGGGACT TTCCGGGACT TTCCATCCTG 60

10 CCATCTCAAT TAG 73

15 (2) INFORMATION FOR SEQ ID NO: 10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 256 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

20

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

25 CTCGAGGGGA CTTTCCCGGG GACTTTCCGG GGACTTTCCG GGACTTTCCA TCTGCCATCT 60

CAATTAGTCA GCAACCATAG TCCCGCCCT AACTCCGCCC ATCCCGCCCC TAACTCCGCC 120

30 CAGTCCGCC CATCTCCGC CCCATGGCTG ACTAATTTTT TTTATTTATG CAGAGGCCGA 180

GGCCGCTCG GCCTCTGAGC TATCCAGAA GTAGTGAGGA GGCTTTTTTG GAGGCCTAGG 240

CTTTTGCAA AAGCTT 256

35

(2) INFORMATION FOR SEQ ID NO: 11:

40 (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 582 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

GGCAGAGGT AATTCTACC AGAAATTTCC AGAGCATTAT GTAGGTAGAA AAAAATGCAA 60

50 GCAAGCTGTT AAAGATCTTG GATCCCATTA TATAGTATGT ATAGCTGAAA TCTGTAATTC 120

AATCACTTTT TCTCTTTTAT CCTCTAACCA AAAAATGTGT TAATTTTGCA TCCCAAATGT 180

55 TTTTAATCTT TGTATATTTT TTA AAAATCC TTTTCTCCTC ATCATTGCCT TTTTGTGGT 240

TGTAAATAGA CTTACTTGCA CTTGAAGAT GAGTTACTCC TTGTCATCTT ACAAATATGT 300

GATATGGTAA TTTTCATAAC AGATGTCAGT TTTGAACCAA GAATTGGTGA TTTGTTTATA 360

60 AGAAAAAAC TGGCTTCATT TCTGTGAAAT TGCTCTTTGA AAATTTCTTT TTACACGTGT 420

AAGCCAACCTG AGATACCGTG ATGGTGTGA TTCTTTTCAA TGATGCTTAC CATCTATTTT 480
 5 AGCCACTGAG CCTTTTATTA TTGTCTATT TGTAAGTTT ATTTGTCTTA ACTCATTTAA 540
 TAAATATACT GTTTATCTGT TTCTGAAAAA AAAAAAAAAA AA 582

10

(2) INFORMATION FOR SEQ ID NO: 12:

(i) SEQUENCE CHARACTERISTICS:

15

- (A) LENGTH: 465 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

20

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:

GTTTGGGGGT GAGGCCGAGC TGCTGCGGGG CTTCGTGCGG GGCAGGACA CAGCTACTCG 60
 CACGGCGGCG GCGCCTGGCT ATGATGTTCC TCACCCAGGG CGGGCCTCTG CCCTCTACTC 120
 25 GTGCCAGGCC CACTTGCCAG GCAGGAGCCC TCCCCAAGCC TTCAGGGCTG CTCGGAGTCA 180
 CCTGTTGGAA TGGACTAAAA GGACCCTTGT GTGGGAACAG GTGCTCCCCA AACACCCTGC 240
 TGCTGGCTGC CAGGCAGGCC CTCTGGAAGG GAAGGGGCGAG GACTCATCAG GACCTCCCTG 300
 30 GACCCCTGCA GGCAGGCAG CTGCGGCCG AGCCCAAGCA TTTGGCTCTG CTGCCCCCAA 360
 GGGACAGGA AGCCTCTTGG GCCTCTTCCC TTCTGGACA AGGCCCCCTG CCTTTGCCCTC 420
 35 ACATAAACTG TACAGTATTT TCATTAAAAG CCTCTTTCAT AAAAA 465

40

(2) INFORMATION FOR SEQ ID NO: 13:

(i) SEQUENCE CHARACTERISTICS:

45

- (A) LENGTH: 474 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

50 ATGCAATTC TGCTCACAGC CTTTCTGTTG GTGCCACTTC TGGCTCTTTG TGATGTCCCC 60
 ATATCCCTAG GCTTCTCCCC CTCCTAGAAG GGCTTCTTGA TAGATTAGAA AATAAGAATG 120
 AGTGACATTT CCTATGTGCA TATAAGAAGG AGCCACAAGA CATGTCTTTT AAATAAAAGG 180
 55 ACAGTGCCA TCCTTTTAGC TGCCGAATAG AACCTTGGTC TCATCCTCCT GGAGCTAGGC 240
 CTTTAAACA GCTTCTGTGT TTCTCATTTG TCTCAGTGT TTGCCAGGGT TTTATCGGAA 300
 60 AGATAATGTT CCGTTTAAAA TATTTCTTAA TGAGGCCGGG CGTGGTGGCT CACGCCTGTA 360

ACCCTAGCAM TTGGGGGCTG AGCGGGTGA TCACGAGGTC AGGAGATCGA GACCATCCTG 420
GSTAACATGG TGAAACCCCG TCTCTACTAA AAATACAAAA AAAAAAAAAA AAAA 474

5

10 (2) INFORMATION FOR SEQ ID NO: 14:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 314 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

15

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

20 TTATGTTGGG GAGCAAGACC TGATAGCCAG CCTTTACATG GGAGTATAAT TCTGTCCTCC 60
ATCTCATAAG CCCAGTACC TGAGCCAGAA TGATTATAAC CAACCACACT GTCTCTTTAT 120
CATGGATGGC TTTAGCAGTA GGTATATTTTC ATCATTGCCA TTTGTAGCTC TACAGTGGTT 180
25 TATAGTAATT TCTCATCTTT TAAGTCTCTC CCTCAGTGCC TGTGTGTATC AAATCATTG 240
CTCTCTCANG CAGTTGAGCT CTGCATCTCC CCYTATGGGG GAGAGCTGTG TTGGAGAGAG 300
AGAATATNAC TTCC 314

30

35 (2) INFORMATION FOR SEQ ID NO: 15:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 613 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

40

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:

45 CTCATATGCG CGTCTGGCTA AAAGTGAACA TGCCATTGAT CAATCTGCTT TTATTATATT 60
ATGTTCTCTAA TGGTGGCAAG CAAGACAAGA AGTAGAAAGA AAGATGGTGT AAGCTCAAGA 120
ACCCACTAAA TCTATCCTAT GGCCTGGGTT CACCCAGCCT GCTTTGTGGA TTTTGTCTCA 180
50 CTATAACAGA GCTCCCAAGG AGACTGCAGA GTCAGCTCCC TTAAGCACTG TAACTAAAGC 240
CTAACTCTTC CGTTCCACCC AACAAATGTYC CCAGCTCATC CTCTTTCCCR AAGTCCCTTT 300
TCTGCCCCAG ATGCGAATTG CATTTAACTA ATCCTCAAGT GAAATGTCCA CACAGRATTC 360
55 CATTTTAATT AGCATACCAT AGTTTPTGTG CAAATPTGCT TTCAGARGAC TCCCATGCA 420
GCTGCTCAGA GACGCTAAWG GCAGGGCCTC TTGAWGCTTT CCCGATAGCT TTCAGCTGCA 480
60 ATAGCTCTTA GGCAGAATGC CATGAGCGTC CTGCCCAACT GTATTACTGG GGAACACCTG 540

ATTGGCTAGA AGTTGATCCT CCTGTAACCTT TTCTGAGTTC TTTACATTTA CTCGTGAAAC 600
CCAAATATGC CAC 613

5

10 (2) INFORMATION FOR SEQ ID NO: 16:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 356 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
15 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 16:

20 CCCCCCAT TGAACCTGG GCTGTGAAAG TTTTGGCTG TGTGGGTCGT TCTGTGTGGC 60
GCCTGGTGTG TGGTCCCAA CTCCTGTTGC AAAGTGGCAG CAGCCAATCA TGAAGCGCCC 120
TTATTTT TAG TTGCAGATGA CCAGGTCTCC CCCCCACAGC CTCTGTCTGG TCCCTCATTG 180
25 GTGAGTGGTC TGCCTGCCCA AGGAGCCTGA TTGGTGGGAA ATGGCATCAT CTAATATGAT 240
GGGAAGGCAT TTGGTCCTGG TTATGTTTAT TACAACATCA TTGCACTCTG GGACTCCAGT 300
30 CCCTGAAAC GTAATTTGTG GTGTTACCAA AGGACCACAG GGGAAAAAAA AAAAAA 356

35 (2) INFORMATION FOR SEQ ID NO: 17:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 414 base pairs
(B) TYPE: nucleic acid
40 (C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:

45 GAAACTANAT CCCGGGGCTT TTAACNGGTA CTTGGGAAAT AAGTATTGGG TAATCACTAA 60
GNGGACATTG ACTGCACCAA ACCAAAGCTA TAGAAAGAAA TGATTGACTT TTTAAAATAT 120
ATTCACATTA ACTGTCCTAG GATACTTCTC TTGAGGCTTT GGAAAACTTC TTCCTTGAAA 180
50 TTTGCATATC CACTCCAGTT CTGTCACCAA AGATTTTAAT CTTCAGATCG CAATTTCTCTC 240
TCTCCAGAA AAAAGTACTA CAACAGGCTC AAGGGATATG CTTTGGTGGT CAAGGGATTA 300
CACTATGGTT TTCCTTCTGT TCACAATGGT ATTTACAGGA GACCTTGTC TCAGAGGACG 360
55 TACTGAACTA TCTTTATGAC TTTGGATTTG ATCAGAGGTT TAAAAAAA AAAA 414

60

(2) INFORMATION FOR SEQ ID NO: 18:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 469 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 18:

10 AATCACCATT GCAATACAAA TGATCTGCCT GGTGAATGYT GAGCTGTACC CCACATTGGT 60
CAGGAACYTC GGAGTGATGG TGTGTTCTCT CCTGTGTGAC ATAGGTGGGA TAATCACCCC 120
15 CTTCATAGTC TTCAGGCTGA GGGAGGCTCT GCAAGCCTTG CCCCTCATTT TGTTCGCGGT 180
GTTGGGCTCT CTGCGCGGG GAGTGACGCT ACTTCTTCCA GAGACCAAGG GGGTCGCTTT 240
GCCAGAGACC ATGAAGGACG CCGAGAACCT TGGGAGAAAA GCAAAGCCCA AAGAAAACAC 300
20 GATTTACCTT AAGGTCCAAA CTCAGAACC CTCGGGCACC TGAGAGAGAT GTTTTGCGGC 360
GATGTCTGTG TGGAGGGATG AAGATGGAGT TATCCTCTGC AGAAATTCCT AGACGCCTTC 420
25 ACTTCTCTGT ATTCTTCTCT ATACTTGCCT ACCCCCAAAT TAATATCAG 469

30 (2) INFORMATION FOR SEQ ID NO: 19:

(i) SEQUENCE CHARACTERISTICS:

- 35 (A) LENGTH: 550 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 19:

40 CCCCCCCCC CCCCACACT TTCAGGAGTC ACCCCCCAGC ATTTGGGGTT GGGTTGGCCC 60
TACTCCAGCC TGGAGCTCCC TGAGGGAGCC TGCCTCCCT GCTCCCAATC CCCGCTACTG 120
GTGCAGGGAT GCAGCCTGGA GCTGGCGTCC TTGTTCTGGG CCTGCTGCTG CCGCCACCCC 180
45 AGAGCCCCAG CCTGTCTGA ATTGACATCA GTGCTTCCCT GAACTGCCTC CCCACCCCT 240
GGGCATTATC CCAGGAACT TTATGTTTTT TAGAAGCTAA GCAGCTGCTG GGACTCAGGG 300
50 ACTGGTGAG GTAGGCTGAG TGGCAGCTCA GTCCTAGAAG GTCTCTGAAG ATCTGGACTG 360
AGGACCTTGC TACTCCCCAA GCCAGAGCCC ATCAGCCAGG CCTGCTGTGA GCCACCTGCC 420
TGTGGAGTGC TGAGCTCAAC CAAAGGCTGG CAAGCTCTGG GCCTCATTTA AGGGATTCTG 480
55 ATGAGCCGAT GGGCCCTGGA GGCAGCCCAT TAAAGCATCT GGCTCGTTTT TGGAAAAAAA 540
AAAAAAAAA 550

60

(2) INFORMATION FOR SEQ ID NO: 20:

- 5 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 741 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

10

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 20:

TCTTGAAGAG TGTACAGTAC AGGATTATTA TAATGAAAGT TTATATCAAC AGGGTTTCGT 60
 15 TGGCTCTGCA TATATTATAA GCAAAGAGA TTGGTAAAGT GCCACAGTAT TCCAGATAAC 120
 TTTTCAGTTG CGGCCCTTCT TCTCGTCTT TAATTTGAAA CCTAGATACA TGCAGTAAAA 180
 20 ACTAGGAGAA TGACTTTTAC CCTTGGGGAC AGCCAAGTTT TGTGATAAA CCTATTTCTT 240
 AGCATGCCTT CAGGAAGTTG TGCCAGACCC TAGATTGTGA AGGACCCACT GTTCTTCTGT 300
 TGTACGAGCT CCTTGAACCA TTGTTTCTAG GACCAATGTC ACATCGCTTC ATGGGCATGG 360
 25 NCCATGGGAG CATCTGGGTG ATAYCTGTCT ACAGTATTGG CTCTTCTGCG AGGCTGATAC 420
 ACAAGGCCTC TCTTCCACAT GATCATTTGC AAACCTCCCC CAGCCCCTAC CATCCAATGT 480
 30 GGAAGGAAAA CAAGAACTGC CTGAAGAAGA GTCCAAGCTA CAGATACACA GCGTGTGCAT 540
 TCGGCTGTC ACCTTCTTCC TCCCACTTCT GTATCCTCAG AGATGCTGCG TGGATGTTTC 600
 CTTAACCTCA GCTGACTTCC CTGTGAATGT CTAATGCTAG TTCAGGGCCT CCAGGCATTG 660
 35 ATTTGTACAG TGGTAACTCC CAATGAGGCT TCTGTTATCA TTTGGTGTGC TTTTCTGTGC 720
 ATTAAAAGAA ATGATTTTCC C 741

40

(2) INFORMATION FOR SEQ ID NO: 21:

- 45 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 991 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

50

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 21:

GGCAGGATC TCCCTGGGG AAGTTTTTCT TTTTCAGGAG GGAGGAGGGC TTTCCAGGT 60
 AATGTGTCTA GAGTGTGGG CAGAAAATCT GGGACCACAC CACACCAGTT CTCTCCTTAA 120
 55 TCCACGTCAT TTGCCTTCTA TCCAGCTAT GTTCCAGTG TCCTCTGGGT GTTCCAAGA 180
 GCAACAAGAA ATGAATAAAT CTCTGGTGAG TTGTTTATTT GTTCTTCACT TTGTTTACAA 240
 60 CTGTATTTTC TGAGTTTATG GGTGTCTGTG AATTAAAAAG GAAAAGTAGA AATAAGTAAA 300

ACTCAGGTTG AAGGAAATAT ACATAAATAA GATAAAGCTG ACCTGTAGAT ATAGCAGGTT 360
 ATAAAGCTTA GAGTTGTCTA AGTTGAGTGC AAATTTTCCT CTGATCTTTC TGATGCCGAA 420
 5 CAAAAAGCA GTCATGTTTG TTATGTGATT GGAATGGAAC CCGAGAAGAG AGCATGCTGT 480
 GTTCTTGTTG GACAGGAAAG CTTGCGTGCA CCAAGTCTGA ACCACCACCT TCATGGTGAC 540
 10 ATAGATTATG TGCTGGAACA TATTTACAC CCGCCTGGCA GTAAACACTT GTAGTGTGT 600
 GCAGTGGAAA CGGTCACTCT CCGCTAAAGC ACGGCGTGT GTGCAGCGGA AATGGTCATC 660
 15 TGCTGCTAAA ACACAGCTTC CATCGTAATG TATGCTCCTT ACTCAAAGAG TGTGGTCCCA 720
 AACAGCCTTT GGGAGGTCCT CCTTGATTCA TGGATGAAAC CTGGAACATC TTGAGGACTG 780
 AGTTAACCAT AGGTCCCTAA ATAACCTCC ACACGTTTTT CTTAGTTTAT CTCTACATGC 840
 20 AGGGTGTGCA GCAGCCTGTT CAAAGTCATA TTTTCTGGGA AATATTTCCA GTGTTTATTT 900
 GCACTTTAGC CCACTCTGTG TAGCCTTATT TCTTCTAAAC TCACCATTAA TCTGAATAAT 960
 AGTCAAATTT AGGGGGACTG TATTTGCCTT A 991
 25

30 (2) INFORMATION FOR SEQ ID NO: 22:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 653 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 35 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 22:

CCACGCGTCC GGAATTCCTT TGAGGATCTT GGGCTATCTT TGACAGGGGA TTCTTGCAAG 60
 40 TTGATGCTTT CTACAAGTGA ATATAGTCAG TCCCCAAGA TGGAGAGCTT GAGTTCTCAC 120
 AGAATTGATG AAGATGGAGA AAACACACAG ATTGAGGATA CGGAACCCAT GTCTCCAGTT 180
 45 CTC AATTCTA AATTTGTTCC TGCTGAAAAT GATAGTATCC TGATGAATCC AGCACAGGAT 240
 GGTGAAGTAC AACTGAGTCA GAATGATGAC AAAACAAAGG GAGATGATAC AGACACCAGG 300
 GATGACATTA GTATTTTAGC CACTGGTTGC AAGGGCAGAG AAGAAACGGT AGCAGAAGAA 360
 50 GTTTGTATTG ATCTCACTTG TGATTCGGGG AGTCAGGCAG TTCCGTCACC AGCTACTCGA 420
 TCTGAGGCAC TTTCTAGTGT GTTAGATCAG GAGGAAGCTA TGGAAATTAA AGAACACCAT 480
 55 CCAGAGGAGG GGTCTTCAGG GTCTGAGGTG GAAGAAATCC CTGAGACACC TTGTGAAAGT 540
 CAAGGAGAGG AACTCAAAGA AGAAAATATG GAGAGTGTTC CGTTGCACCT TTCTCTGACT 600
 GAAACTCAGT CCCAAGGGTT GTGTCTTCGG AGGCATCCAA AAAAAAAAAA AAA 653
 60

(2) INFORMATION FOR SEQ ID NO: 23:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1486 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 23:

5	GGCAGGCTGA CGACCTGCAA GCCACAGTGG CTGCCCTGTG CGTGCTGCGA GGTGGGGGAC	60
15	CCTGGGCAGG AAGCTGGCTG AGCCCAAGA CCCCGGGGGC CATGGGCGGG GATCTGGTGC	120
	TTGGCCTGGG GGCCTTGAGA CGCCGAAAGC GCTTGCTGGA GCAGGAGAAG TCTCTRGCCG	180
20	GCTGGGCACT GGTGCTGGCA SGARCTGGCA TTGGACTCAT GGTGCTGCAT GCAGAGATGC	240
	TGTGGTTCGG GGGGTGCTCG GCTGTCAATG CCACTGGGCA CCTTTCAGAC ACACTTTGGC	300
25	TGATCCCCAT CACATTCTTG ACCATCGGCT ATGGTGACGT GGTGCCGGGC ACCATGTGGG	360
	GCAAGATCGT YTGCTGTGC ACTGGAGTCA TGGGTGTCTG CTGCACAGCC CTGCTGGTGG	420
	CCGTGGTGGC CCGGAAGCTG GAGTTTAACA AGGCAGAGAA GCACGTGCAC AACTTCATGA	480
30	TGGATATCCA GTATACCAAA GAGATGAAGG AGTCCGCTGC CCGAGTGCTA CAAGAAGCCT	540
	GGATGTTCTA CAAACATACT CGCAGGAAGG AGTCTCATGC TGCCCGCANG CATCAGCGCA	600
35	ANCTGCTGGC CGCCATCAAC GCGTTCGCC AGGTGCGGCT GAAACACCGG AAGCTCCGGG	660
	AACAAGTGAA CTCCATGGTG GACATCTCCA AGATGCACAT GATCCTGTAT GACCTGCAGC	720
	AGAATCTGAG CAGCTCACAC CGGGCCCTGG AGAAACAGAT TGACACGCTG GCGGGGAAGC	780
40	TGGATGCCCT GACTGAGCTG CTTAGCACTG CCCTGGGGCC GAGGCAGCTT CCAGAACCCA	840
	GCCAGCAGTC CAAGTAGCTG GACCCACGAG GAGGAACCAG GCTACTTTCC CCAGTACTGA	900
45	GGTGGTGGAC ATCGTCTCTG CCACTCTCTG CCCAGCCCTG AACAAAGCAC CTCAAGTGCA	960
	AGGACCAAAG GGGGCCCTGG CTTGGAGTGG GTTGGCTTGC TGATGGCTGC TGGAGGGGAC	1020
	GCTGGCTAAA GTGGKAGGC CTTGGCCAC CTGAGGCCCC AGGTGGGAAC ATGGTCACCC	1080
50	CCACTCTGCA TACCCTCATC AAAAACAATC TCACTATGCT GCTATGGACG ACCTCCAGCT	1140
	CTCAGTTACA AGTGCAGGCG ACTGGAGGCA GGAATCCTGG GTCCCTGGGA AAGAGGGTAC	1200
55	TAGGGGCCCG GATCCAGGAT TCTGGGAGGC TTCAGTTACC GCTGGCCGAG CTGAAGAACT	1260
	GGGTATGAGG CTGGGCGGG GCTGGAGGTG GCGCCCCCTG GTGGGACAAC AAAGAGGACA	1320
	CCATTTTTC AGAGCTGCAG AGAGCACCTG GTGGGGAGGA AGAAGTGTA CTCACCAGCC	1380
60	TCTGCTCTTA TCTTTGTAAT AAATGTTAAA GCCAGAAAAA AATAAAAAAA AAAAAAAA	1440

AACTCGAGGG GGGCCCRKAC CCAATCWCCC TATAGTAKAC GTANNN

1486

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(2) INFORMATION FOR SEQ ID NO: 24:

(i) SEQUENCE CHARACTERISTICS:

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(A) LENGTH: 2323 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 24:

CTTCGCCGTT	TCTCCTGCCA	GGGAGGTCC	CGGCTTCCCG	TGGAGGCTCC	GGACCAAGCC	60
CCTTCAGCTT	CTCCTCCCG	ATCGATGTGC	TGCCGCCGCC	GCCGCCGCCG	TCCCGCGTCC	120
TTCCGTCTCT	GCTCCCGGA	CCCGGCTCCG	CGCAGCCAGC	CAGCATGTCC	GGGATCAAGA	180
AGCAAAAGAC	GGAGAACCAG	CAGAAATCCA	CCAATGTAGT	CTATCAGGCC	CACCATGTGA	240
GCAGGAATAA	GAGAGGGCAA	GTGGTTGGAA	CAAGGGGTGG	GTTCCGAGGA	TGTACCGTGT	300
GGCTAACAGG	TCTCTCTGGT	GCTGGGAAAA	ACAACGATAA	GT'TT'GCCCCT	GGAGGAGTAC	360
TTGTCTCCCA	TGCCATCCCT	GTTAATTCCT	GGATGGGGAC	AATGTCCGTC	ATGGCCTTAA	420
CAGAATCCCC	CAGATGGCTT	CATGGCCCCC	AAAGCATGGA	AGGTCCTGAC	AGATTATTAC	480
AGGTCCCTGC	AGAAGAACTA	AGCCTTTGGT	CCAGAGTTTC	TTTCTGAAGT	GCTCTTTGAT	540
TACCTTTTCT	ATT'TTTATGA	TTAGATGCTT	TGTATTAAAT	TGCTTCTCAA	TGATGCATTT	600
TAATCTTTTA	TAATGAAGTA	AAAGTTGTGT	CTATAATTAA	AAAAATATAT	ATATATATAC	660
ACACACACAT	ATACATACAA	AGTCAAAC TG	AAGACCAAAT	CTTAGCAGGT	AAAAGCAATA	720
TTCTTATACA	TTTCATAATA	AAATTAGCTC	TATGTATTTT	CTACTGCACC	TGAGCAGGCA	780
GGTCCAGAT	TTCTTAAGGC	TTGT'TTGAC	CATGTGTCTA	GTTACTTGCT	GAAAAGTGAA	840
TATATTTTCC	AGCATGTCTT	GACAACCTGT	ACTCTTCCAA	TGTCATTTAT	CAGTTGTAAA	900
ATATATCAGA	TGTGTCTCT	TCTGTACAAT	TGACAAAAAA	AAAAATTTT	TTTTCTCACT	960
CTAAAAGAGG	TGTGGCTCAC	ATCAAGATTC	TTCTGATAT	TTTACCTCAT	GCTGTACAAA	1020
GCCTTAATGT	TGTAATCATA	TCTTACGTGT	TGAAGACCTG	ACTGGAGAAA	CAAAATGTGC	1080
AATAACGTGA	ATTTTATCTT	AGAGATCTGT	GCAGCCTATT	TCTGTCACAA	AAGTTATATT	1140
GTCTAATAAG	AGAAGTCTTA	ATGGCCTCTG	TGAATAATGT	AACTCCAGTT	ACACGGTGAC	1200
TTTAAATAGC	ATACAGTGAT	TTGATGAAAG	GACGTCAAAC	AATGTGGCGA	TGTCGTGGAA	1260
AGTTATCTTT	CCCGCTCTTT	GCTGTGGTCA	TTGTGTCTTG	CAGAAAGGAT	GGCCCTGATG	1320

60

	CAGCAGCAGC GCCAGCTGTA ATAAAAATA ATTCACACTA TCAGACTAGC AAGGCACTAG	1380
	AACTGGAAAA GACCACAGAA AACAAAGAAT CCAACCCTTT CATCTTACAG GTGAACAAAC	1440
5	TGTGATGATG CACATGTATG TGTMTGTAA GCTGTGAGCA CCGTAACAAA ATGTAAATTT	1500
	GCCATTATTA GGAAGTGCTG GTGGCAGTGA AGAAGCACCC AGGCCACTTG ACTCCAGTC	1560
10	TGGTGCCCTG TCTACACCAG ACAACACAGG AGCTGGGTCA GATTCCCTTC AGCTGCTTAA	1620
	CAAAGTTCCT CGAACAGAAA GTGCTTACAA AGCTGCCTTC TCGGATACTG AAAGGTCGAG	1680
	TTTTCTGAAC TGCACTGATT TTATTGCAGT TGAAAAAAAA AAAAGCTAT TCCAAAGATT	1740
15	TCAAGCTGTT CTGAGACATC TTCTGATGGC TTTACTTCCT GAGAGGCAAT GTTTTACTT	1800
	TATGCATAAT TCATTGTTGC CAAGGAATAA AGTGAAGAAA CAGCACCTTT TAATATATAG	1860
	GTCTCTCTGG AAGAGACCTA AATTAGAAAG AGAAACTGT GACAAATTTT ATATTCTCAT	1920
20	TCTTAAAAAA CACTAATCTT AACTAACAAA AGTTCTTTTG AGAATAAGTT ACACACAATG	1980
	GCCACAGCAG TTGTCTTTA ATAGTATAGT GCCTATACTC ATGTAATCGG TTACTCACTA	2040
25	CTGCCTTTAA AAAAAAAAAAC CAGCATATTT ATTGAAAACA TGAGACAGGA TTATAGTGCC	2100
	TTAACCGATA TATTTTGIGA CTAAAAAT ACATTTAAAA CTGCTCTTCT GCTCTAGTAC	2160
	CATGCTTAGT GCAAATGATT ATTTCTATGT ACAACTGATG CTGTGTTCTA TTTTAATAAA	2220
30	TTTATCAGAG TGAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA	2280
	AAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAA	2323
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(2) INFORMATION FOR SEQ ID NO: 25:

- 40 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 683 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 25:

	GGCACGAGCC TGTGTGGTCA TGTTCCTCGT GGTGCAGTAC CTGACATGAG CCAGCCACGC	60
50	TCAGTGGCTG AACAGCATTC CCACAGCCTG CAAGTGTGTG TGTGTGTGAA AGAGAGAGGG	120
	GGGCCAGAG CCGCCTTTTG AAATGTTTGC CTGTCTGAAC TGTGAAGACA CTGGGAGTG	180
	ATTGTGGTCT AATTTCCAAC CTGCTCTGTT TTCTGTGACA TCTTGGAGGG GAGCTAGTGC	240
55	CACACCATGC GCGGTGCTTA GAAATGAAAA AGTCCCGGGT CTGTCTCTCT CACTCTCGCT	300
	CTCATGGGGG AGGGAAAGAA TGGCTTTGGT GGCTTTGTTC ACACAGCTGA TGCCTGCTGG	360
60	GAAGGTGTCC ACAGTGAGCC TGTGTGCAGG ACTGTCCACA CGTTTCACAC TTGTCACCAT	420

CAGGCCTTTC TGCTCCTGAT AGGGTGGAGC AAAAGTGGAA AGGAAAGGAA AGAGGCTTTT 480
 CTCACAGCCA TTATATTAAA TAGTAGGTCG ATTACATCT CGTGCTCCTG GCCACCTTCC 540
 CCTGTGCCTC AGTGACATGT AGATGACTGA CTGCCAATAC TTGTCACCAT TCCCTGGAAG 600
 CAGCTACCTA GGGGAAACAA GATGTAGTGC TATTGCCGAT AACAAGTAAG ATTTTCCACA 660
 10 CTAAAAAAAA AAAAAAAAAA AAA 683

15 (2) INFORMATION FOR SEQ ID NO: 26:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2036 base pairs
 (B) TYPE: nucleic acid
 20 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 26:

25 CTGAGAAAGG AAAGCATTCG GATCTGCTGC AAAACACAT ATATCCATAA AGACTCATGT 60
 TATTCAGAAA ACAGATGTGT AACACAATCA CATTGCGATG AATCCTTTAA AAGGAAGAAG 120
 ACCTTAAAGT ATCTGCAAAAT CTGAATTTCT ATTTATTCCT TCACTGAATA TAGAAACAAT 180
 30 GGTATCTGA TTATTAGAGA TATTATTTTG GATATGTTAC TTATTAAC TT GCTATGGCTG 240
 GTAACCATGA TAAAGTCTGT TATTAATAAC AACATAATTC TTTTTTTTAA GAAGAAAAGC 300
 35 TTATTTTCA TTGACAGTGT ATAGATTTAT CACTTAGTT GTGTTTGCT ATTAGTGTTT 360
 TAATTTTTTT TTTAAGTTGA GTGTTTGATA AATTTTAAGA CCCTGTCCCC ACCTTGTTTT 420
 GAGTCTGTG TTGACTACAG GTATATAGCY CAWTTAAAA ATCCTAAAGC AAAAGAATTT 480
 40 TATTTATAAA AGAATCMAMC MGTTCATGC ATGAGGCTGT GAAGTCAGAT ATTTAGTAAT 540
 AAAAGCAGCA GTGCCTTTTT TTGTATTTAC CCAITGACCC CCACCAAATG CAACTGTTTT 600
 45 ATATTAAGAA AATAGTAACA ATTTTAAAAT CTCAGAGTAA AATCTATTTT ACTACATGCT 660
 TTTCCTCCCT TGTCTGATT TAAGCAGTGT GACTTGGCA TCTCTACATT GTCCTAGGGA 720
 CAGTGGTGTT CTACAATATT ATCATGTATG ATGTTTTATT GGTGCTTTTT ATTCATAGTG 780
 50 GCTTCTTACC AGAAACAGTA GGAAGAAACA CATGAAGTGT GTACAAGACA TGAACATTG 840
 CTGCTGATAT GTTGTTTTTT CACATGCTTT TGAGTTTCA CTTTTTAAAC GAGAGCCAGC 900
 55 AAGCAAAATA GATGTGGCTG GGTCTGCCTG TCCGGGCGGC TYTTTGCACC GAGCTCTCAA 960
 ATCCTGTGTA TTGAGGGTTC CTTTTTGTA CTCAGGATTG GAGCTACAGC TGGGCCCCC 1020
 60 TCTCTCCCAT TCGTTTGAAG AGACACTGAG GGAAACAAGG GTTCTTTTG AGGTGTCTTT 1080

GGCTGCCTTT TACGGGATGG GAGCCTTCTC CGGATCTTTT GTTCTTCTGC ACCTCTTGTA 1140
 GCTACTGCCC GTGCAAGGTT GTAGATGTTA TTCCCCAGGA GCCTGGGCTK GGGGGCTGAG 1200
 5 CTGGGCTGAA TGCAAAAGCA TGCAACCAGA AGGCGGGCAA GGGGAGGAAA AGCAGGCCTG 1260
 GCCTCATTGG TCCCCTGGAG ATGTCTGTAG CAGTCAGCTC CAGCTTGGGC CTGGGGAAGC 1320
 10 AGCCTGACCA AGGCGCTCAG GTGTGCCTGT TACAAGAAGA ACCTGCAGAA GGATAATTTG 1380
 CACATGGAGC TGTGATAACA CTAATGTTGA TTTTTTTTTT TTTTACAAGT CATCAGRGAT 1440
 GTTTGCAAAG TGAGTTTTAT TTTTGTGTA TTCTTTTATC TTTACTTAAA GGTGAATGTG 1500
 15 TATTCCTCTG GGAGGAATAG GAAGAAAACA GGAATGTTAA TAATGTCGAA CAGAAAACCTT 1560
 CCTCCCTTAT TAATATATAA TCYTATGTA TTTATGCCNT AATGTAAGCT GACTTTTAAA 1620
 AAGCTTTCTT TTGTGTCATG CCTGTGCAG GCATCTGTAT TGTACATGCA TGCCTTTCGT 1680
 20 CCTGTTTTCC TGTATAAAGT TAGTGAACAA AGAAATATTT TTGCCCTAGT TCATGTTGCC 1740
 AAGCAATGCA TATTTTTTAA ATTGTGCATA TATGGAAAGA GCATGTTTGT TACATGTAAA 1800
 25 AGCTTTACTG ATATACAGAT ATACTAATGT TTGAAGATGC TGTCTTTTGC AAGTGTACAG 1860
 TTTTCAAATG TTGTTACCAG TGAAACACCC TTGTGGTTTA AACTTGCTAC AATGTATTTA 1920
 TTATTCATTT CCTCCCATGT AACTAAGAAT CATGGCTATA TTTTATATCA ACGTTATATT 1980
 30 GAAAGTGAAG GGAAATGATT AATACAAGGT TTGTAAACAA AAAAAANAA ANNAAA 2036

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(2) INFORMATION FOR SEQ ID NO: 27:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 717 base pairs
 40 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 27:

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GGCACGAGAT AACATAGGCA CAATAATACT GTATGTCTAC TTCTAGGATT ATAAGGAATT 60
 AACATTGAGA TGACATTTCC ATTTGAGAAG AAAATAGTTG CTTTCAGTGC CTTTATTTG 120
 50 ATTCCTGGAG AGAGCAGACT CGCACCAACA TTCAACCCCA GCGCTGATAT GACAGTAATC 180
 CTCAGAGGCA GAGCCAGCA CAAAACAGCA ATGCTAGAAA GTTACAATTG GAAAGTTTCC 240
 TGCCAGCTTC GGAATGACA CTGCAAAGCT GATGCCAGAA ACTGCCAGAG TAATTCTCCT 300
 55 CATTACTGCT CTACCCACCC ACTTTCAGCT CCCCAAATTA ACTAGTCAG TTAGCTAATC 360
 CTCTTTACCT TTATCATTTA GGTGAGGCAT TGCACAAAAA CTCTCGACTT TGCCATATAA 420
 60 GGGCTGTGGT TCTCTGTGGT CCTGGATAAG AGGCATCACC ATTATCTGGA AACATGCAGT 480

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AAATGCAGAT TCTTCATCTT CTCCCCAGAC CTCCTGAGTT AGAAATTCAC AAGTTCTCCA 540
GGTGATCTCA TACATGCTAA AGTTTGAGAA CCAATTGAGTA AAGTTAATGC ATTAAGAAGA 600
GATTAGATAG GGATGGTGGC GTATCTTCCT ACAGTTTCCC TGTTAACAAG AAAGTCAGAG .660
GTCAGTTGAT CAGACATTAG ATTATTTATT GCTAAACTA AAAAAAATTA AAAAAA 717

(2) INFORMATION FOR SEQ ID NO: 28:

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(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 495 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 28:

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GAATTCGGCA CGAGCAGCAT CCTAATTTTA GTTTGGAGAT GCATTCTAAA GGATCTTCTC 60
TATTGCTTTT TCTCCACAA TTAATCTTGA TTCTGCCTGT CTGTGCACAT TTGCATGAGG 120
AACTGAACTG TTGTTTTCAT AGGTAAATGA GAGACTGAGT TTTTTCATTT CTGAAGAGAA 180
AGGGCATTTG CTCCTACAAG CTGAAAGGCA CCCCTGGGTG GCTGGGGCCC TCGTGGGAGT 240
TTCTGGGGGA TTGACCCTTA CAACATGCAG TGGCCCTACA GAAAAACCTG CAACTAAAAA 300
TTATTTTITA AAAAGGCTCC TCCAGGAAAT GCATATAAGG GCTAATCACC CAGTATTTTG 360
ARGCTTCGAA GARGTAATAR AMCCCTGGAG AGAGAACTG AGACATGTAA GAGGGTGGGA 420
ATGACTCAGT GGTGGCACAC TATGGAGTCC TGCCCAACAAG TAGCACACAT CAACCCACTA 480
CACAGAAATC CTAGG 495

(2) INFORMATION FOR SEQ ID NO: 29:

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(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 556 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 29:

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AGCTTAACGT CATGATTCAT TAGGGGAATG CAAGGCAAAA CCATGATGAG AATGCCCTTA 60
GACACCTCTT AGAAGAGCTG CTAGAAAGGC AGACAGCACC AAGCGCTTAA ATGAGATGGG 120
GGCACTGGTG CTTCCTCTGT GCCTACTGGT AGGGGTGCAG CAGAGTGGTT CAGTCTGGGA 180
CAGTTAGCTG GACATCACGT GGACCAACA CACGCATTTT CTGGGTACT TACCAAGGAG 240

AATAGAAAGC AGGCAGATCT TTACAGCAGC TCTTACCTGW TTGCAAAACA ATGGAAATGC 300
 CCACATGTCC ACAAACAAGT KTGTGGTCTG CCTGTGCCAT GAAGCACAGT GTGGCTGAGC 360
 5 GTCAAGAGTC CCCACACTCA AAGGAGGCAG CAGATACAGG GCTGCACACT GTGTGATTCC 420
 ACACATGTGA CATTCCTGGAC ACGGACATGC TGGATGGCAA AACGAGCATC GGGCTGAGAG 480
 10 GACTGCTGAG AAGGGGAACG GGGCTGCTGG GATGTGGGTT GATTGTAGCA GTAGCTCATG 540
 GAGATGTGAC CTCAA 556

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(2) INFORMATION FOR SEQ ID NO: 30:

(i) SEQUENCE CHARACTERISTICS:
 20 (A) LENGTH: 434 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 30:

CTAAATGGTG ACTGTGGCTT TGTCGAGACA GGCCCCAAAT GGTAGGTGTG AACACAACAT 60
 GCACAGAATG AGGAGACATG CAGAGTGCTG AAATACTGTC CTGGACAGAT GTGTTACATG 120
 30 ACTTTCTTTT CAGCTTATTT CTGTGGCCTG CCTTTGAAGA TAGAGCTTTG TTGATATTTA 180
 CATTAAACCA AATTGTATAA YTATGTTCCA TTCTGACATG TTATTTAGCA AARGAAAAAR 240
 35 GAGTAATTCT ACATCAGCAT CTTTAGTGCA TGCTAAAAGA TTAAAAATGT CTTTGGGGA 300
 ACATGTTTTC TATACATAAA TGTTTAGATA GAAATATTTA TAGAATNCTC TATGTGAGTA 360
 TTNATCTCCC TATGTATATT TATATCTAGA TGTGTCAATC TTTGTATTGA TATGAAATGC 420
 40 TATGAATAGT GAGA 434

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(2) INFORMATION FOR SEQ ID NO: 31:

(i) SEQUENCE CHARACTERISTICS:
 50 (A) LENGTH: 715 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 31:

CCACGCGTCC GATCTCACAG CTCGACACT ATTGCGAGCC ATACACAACC TGGTGTGAGG 60
 AAACGTACTC CCAAATAAG CCCAAGATGC AAAGTTGGT TCAATGGGGG TTAGACAGCT 120
 60 ATGACTATCT CCAAATGCA CCTCTGGAT TTTTCCGAG ACTTGGTGTT ATTGGTTTTG 180

5 CTGGCCTTAT TGGACTCCTT TTGGCTAGAG GTTCAAAAAT AAAGAAGCTA GTGTATCCGC 240
 CTGGTTTCAT GGGATTAGCT GCCTCCCTCT ATTATCCACA ACAAGCCATC GTGTTTGCCC 300
 AGGTCAGTGG GGAGAGATTA TATGACTGGG GTTTACGAGG ATATATAGTC ATAGAAGATT 360
 TGTGGAAGGA GAACTTTCAA AAGCCAGGAA ATGTGAAGAA TTCACCTGGA ACTAAGTAGA 420
 10 AAATCCATG CTCTGCCATC TTAATCAGTT ATAGGTAAAC ATTGGAACTC CATAGAATAA 480
 ATCAGTATTT CTACAGAAAA ATGGCATAGA AGTCAGTATT GAATGTATTA AATTGGCTTT 540
 15 CTCTTCAGG AAAAACTAGA CCAGACCTCT GTTATCTTCT GTGAAATCAT CCTACAAGCA 600
 AACTAACCTG GAATCCCTTC ACCTAGAGAT AATGTACAAG CCTTAGAACT CCTCATTTCTC 660
 ATGTTGCTAT TTATGTACCT AATTAAAACC CAAGTTAAAA AAAAAAAAAA AAAAA 715
 20

(2) INFORMATION FOR SEQ ID NO: 32:

25 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 486 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 30 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 32:

GAGCCAGTGC CGGCGAAAGG GGACCTTCCT CTACTTCCTG CCACAGACCC TGTCCCCACA 60
 35 CACTTCCTGC CCCTGCTCTG CTGGGAGGCC ACTTCCTCCC CCAGTGCTGG ATTCCACCCC 120
 CAGCTCACCC TCAAACATGG CCCCCTCTCT CCTCCTGCTT GCCCCTCTCT GCTCCCTGGA 180
 40 GGCTGTTCTG TCCTCCCCTC TTGAAAAGCA ATGCCAGCTT CCTGGGATCT TCTGCCAACT 240
 CCAGCTACCA TGCCCTTTGC TCCTGTCAGC TCAGCTCCTC AAGGGAATTG TCTAMCCTCG 300
 GTGTCTGCT TCCCTCCCTC AACCTCCTCA CCCTGCTCCA AGCTGGCATC TGCCCTCCA 360
 45 CTGCACAGAA CGGNTCCCCC ACCACCTGCC TTTACAGGGA GGAAGCAGCA ACATGGAAGA 420
 ANCGAACTAT AGGGGCTACA ANGATGCTCA GCTCTGATCC CGAAGGCAA AAGNATCTTT 480
 GGGCAC 486
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(2) INFORMATION FOR SEQ ID NO: 33:

55 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 725 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 60 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 33:

5	GTTCCTCTGG TAATAATTAG GTTATTCCCA GAAGCACAGT GTCATTCTTT AAATAAAAGC	60
	TTTCCTGTTT AAAGCTTTTC AAAGGAGCAG ACCACCTTGA AGATTCCCCC TAGGGTTGAT	120
	ATGTGTCTAA TTCATTTTAT AAAAATTATT CTGTCTTCA TTTTAAAGCT TTGGCTATAT	180
10	AGTCAGAAAT GTCCTAAATA ACAAATATT TTGTATTTAA TTTAGGGAAG ACTAAAGGGA	240
	AGAAAAATGA AAATCAGTC TTTATGTAAG CTCCAAGGAT ATTAGGGCTT AAAGGGCTTT	300
	TCTAGTTTTA TGAGAATTTG TACTACTGAT TTTTATATAT TCCTGTTTTT GATGAACAGA	360
15	TCTCTGGGGA AATTGTTGAG TTACAATGGC ATTTCACTGT GATCCCTCTC AAGCTCAGAT	420
	CAGTTCTATA ACCCAATGAC AACCTGTCTC TTTGGTTTAC TGTCCCTGTGA AATGTCAGCT	480
20	CAAGTTTCCC AGAAGTCGTG TGTTTATGAT GAGTCAGAGT GCTTTTCCTC GGTGGGACAG	540
	TTGCTGGCCC TCTTAATTTT GGTGTATGTG CTTCCAAGTA TCTAAACCTC CAGTCTGATC	600
	TGTATATGCT ATCCTAACTG TTAATGTAT TATTGATTAT GTTGATTATC TTGCTTGAAG	660
25	GTTCACTATT TTCAATTTGA TAGAAATAAA GTTTTCTTCT GCTTATAAAA AAAAAAAAAA	720
	AAAAA	725

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(2) INFORMATION FOR SEQ ID NO: 34:

35	(i) SEQUENCE CHARACTERISTICS:
	(A) LENGTH: 437 base pairs
	(B) TYPE: nucleic acid
	(C) STRANDEDNESS: double
40	(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 34:

	CACACAGCAT GCTGCCCTCA GACGTGTCCA TCCTGTACCA CATGAAAACG CTGCTGCTCC	60
45	TGCAAGATAC TGAGAGATTG AAGCATGCTC TGGAAATGTT CCCAGAACAT TGCACGATGC	120
	CTCCTGCTTT TATTGGCTCT TGTGAAATC AAATTGGAAG ATCTTCAGTC CCAGCTGCAC	180
	CCAACGTGGA AAAGTATTCC AGGTCCATCC CCAAGGAACC AACACCGATG ACATGGACTC	240
50	AGGAATCTTA TAACCTACGT GGACTCTTTC CATCCGTACA TTGTCGTGCA CATGCCACTC	300
	ATCACCTGGC GTGCCAGAT CCTCGCARGG CAACACCTG TGATAATTCC AGGTGATTCT	360
55	CTACATCTGC AGCTTGAGGT TAGCCTCATA TCACATTACA TTCTCACTAN AAACNAAAAA	420
	AAAAAAAAA AACTCNA	437

60

(2) INFORMATION FOR SEQ ID NO: 35:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 943 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

10 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 35:

GGCACGAGCT GGAACAGAGA CTAAATCCCA CGAAACTGAC ATTGTTAAAC AACTAAAAAC 60
 AGAAGTACTT ACCTCTTGAA GATTTAATAT ATAATGGTTG ACATGATACA TGTACATGAT 120
 15 GAATGACCAG ATGCTTATGG TCTACATTTT CCTTTATCCT GTTAGTATTA CCTTCCTTAA 180
 TCTTTGTTC A TTAACATGCT AATTCCTCTT CAGTGTATTAT TTTCTAGTGA CAGAATGCTA 240
 20 ACATTTCTTA CACCCTGGCA GAAGGGAGAG AAATGTGTTT TGGGGTGGGT AACTAAATTT 300
 TTGAGTGAAA TATCATAAGA TGANAATGGA AANAAGGAGA CACAAANAGT TATNACAAAA 360
 AAACAATGGT TTTTTTAGCC ATTTGACTGG CTCTTTAAAT AGTCTACAAG ACATTCACGT 420
 25 TTAACATCAC TTTTAGTGAA ATAAATGTG CCATACTAGT ATGTGCTTCA AAAGGGCAAA 480
 TGTGCTTTAG TGCCCTAAGG CTAAATTTTG GTCAATTTGAC ATCAGAGATG TGTAAAGTAT 540
 30 TGCACTTAAT ACGCACCTAT TTNTCAATAG TGTATTTTTT TGGNTAGCAT TTTTTTTTACC 600
 ACTATNTGT TGATAGCTTT TTGTTCTNTN AGGTTGNAAN ATGACAGTGC TNATNTCAAA 660
 CAGATTACCC ATNTGCAGAA CTAAGGGAAG CNATTTATGT ATGAAAGNAA TTNTTGAATT 720
 35 NGTCATNTC AACCNITGNA TTAAAGCTTA GACTAAATAG TAATATATNG TGGGNAGGAT 780
 TTTGGTTTTG TGATATTTNT GTGNATTAAG GNATAGATGT TAACCNITAT TTTGTAGNAA 840
 40 AGTGANITGT ATGTGGTTAA TTATAAATAA AACTGGTACC AGGNAAAAAA AAAAAAAAAA 900
 NAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAA 943

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(2) INFORMATION FOR SEQ ID NO: 36:

(i) SEQUENCE CHARACTERISTICS:

- 50 (A) LENGTH: 604 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 36:

GGCACGAGAA ATCTTCATGC TGTAGTCACT CCAGACCATG GAGTGGCTTT CCAGCTGAAT 60
 60 GAATCCTATG TCTCGCGTGC AGGTGGTTGG TTTCAATGT TCTTGCTAAT TTTTTTTCTA 120

TTGGATCTTG GGAGTTTCTT TTGTTTGCTC CTGTGTTTGC CCAGCTTTAA TAAAACCAGG 180
 CGCAAACAAA AACCATAGCA TTCTGAACAA TAGGGGGCCC ACATTGGACC CAGTATGTCA 240
 5 CTTTAATGGA CTTCAAGAAA AAATCTGAAT GGGAAAAATG AACTAGGAA TGTATACTCC 300
 ACACATTTTA TGCCATATAA TGGTGTGTTT TCTTAATTTT GTTCTTGTC GCGAAATGTG 360
 10 GCTTTCAAAT TAAAATGACC TTTTCTTCTT TGAACTTTT TGTTTTGAAT TGTATAATTA 420
 AGGGTTTGA AAGATTCATA ATTCTGAGAG AGGTTTGCAA CCAGGAGATA CAAAGAAGTC 480
 TCAGTAGTAA TCTGTTCAT GTGCTTTTAC AGCCAGCTAC ATTTAAGGAT GTATTAGTTA 540
 15 CAGAAATTAT ATGTCTGTGT ATGTGTCTCT ACTCAATAAA GTACATGCCT CCACAAAAAA 600
 AAAA 604

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(2) INFORMATION FOR SEQ ID NO: 37:

25 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 349 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 37:

GTGAGTGCCC GGGAGCCCCG AGGCCCTGCC CCTAAGAAGG ATATCTYTRA CCGCTCCCTT 60
 GTCCACACCC TAACCCCCCA GCTGCTCAGG CAGTGGGCAC ATGGCAGGGG CCTCACTGGG 120
 35 GGCACATAGA GCATTGCGG GACTGCGAGT GCTCACCTTT GACTTCCTGC AGGTCGGGGG 180
 AAAACCAGAT CATGATGACC AAAGTYTACA TATCTTGAT CTTTCATGGT CTGATCCTGC 240
 40 CCTCCCTGGG TCTCACCAGG TATATGCCAC CACYTTCTGY TCTAAATCA GAATAAGAGT 300
 CACATCAGGA GAGCACTGTC CCCAGGANAA TGCAAACGGG TTGGCAGCA 349

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(2) INFORMATION FOR SEQ ID NO: 38:

50 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 672 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 38:

GTAGTCGTTG CGGTGCGCGG GATGGCGAAG ATCTCGCCGT TTGAAGTCGT AAAACGCACC 60
 TCGGTACCGG TGCTTGTTGG TTTGGTGATT GTWATCGTTG CTACAGAGCT GATGGTGCCA 120
 60

GGAACGGCAG CAGCGGTCAC AGGCAAGTAA ATAGTAATGC CGGAGCAAGT TTCCTCCGGC 180
 TTTATCATGT CACCCACTGT GGTATATGCG TTGTGGTCTG CCAACTTTGC CGTGAACAAT 240
 5 TTCAGCAATA ATCAGATGGC GGCTGGCGCA ATATTCAAGA TAACGCCTGG CAGTGGTGCG 300
 GCTGATGGTT CAGTGCCTGC GSCACCGTTT YTGCCGTATG TTGCACACCA GGNCTTTTAA 360
 10 ACAGTTTTCG SACCGCGTTT AGCGTCAAGG GTTCAATGCC GGTCCGTAGC TCGTCCTTAG 420
 GTTCACCGCG AGCATAAGCA TTAAACATCT CATCAATTIG CTTCTGGCTG GCGCTATCAA 480
 TACTTTCCAG CATATGTTTA CGCTGGCGGA AACGGGTTAG CGTTTGCCCC ARCMGWTCAT 540
 15 AGGCAATGGG CTTAATGAGA TAATCAAATA CACCACAACG TACGGCTTCA GACACCGTTT 600
 CCATATCGCT GGCTGCAGTG GTAAACACCA CGTCGCCGGG ATAATGCGCC TGCACCAGTT 660
 CATGCAGTAA AT 672
 20

(2) INFORMATION FOR SEQ ID NO: 39:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1908 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

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(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 39:

AGAGTTGATA TTTT TAGAAA CAGTAATTTT ACTTTTAAGG AAATTGGCTA GCTCTTTGAC 60
 35 TNNAGAGCTG TAGGAAGCTC AACATTTCTT TGTAGAGAAC GTTGCTTTTT TTGGATTGTA 120
 CAGGTATAAA AACATTGCTT TTGTTGAATT GTATAGGTGT AAAAAGGGAA TAACTGTATG 180
 40 CAGGTTTGAA AAGGAAATGT GCTTTAGGCA TGAGTCATAA GATGCCATG TACTTGTAGG 240
 CATTTTATTT TCCTTTAGAA ATGGACATCA GCTCTTCTCT TCTGACTGGT AACACATAGC 300
 CCCAAAGCAT GAGATTATTT TTCATTGGGT TTTTATTGTT GTTTAGTTTT GGTTTGTTAC 360
 45 GCCAGCCCAG TCTGTCTGCG GAACACTGAC TCTGCTCTCT AATGAGAACA AAGTTAGAAA 420
 TCTGCCGATA ACCTAAAATA ATTTAGAAAT GAATTAAAAA TGTGAAATCG GGTAAAGTG 480
 50 ATGATGATAA AATAGCATGC AAGAAACAAG CTCCTTCCAT CAGACTTGGC TACTGTTTTTC 540
 TTCTGGTACG ATTTGGTTTG GAAGAGCCTC TTGTTTCTCT CTCTTTGGGG TATGTCTTCG 600
 TTTCTTAATA TGTTTGTAAC ATTATTGAGA TATAATTAC ATACCTTACA ATTCACTTAT 660
 55 TTTAAGGTA CAATTTAGTG GTTTT TAGTG TATTCACAAA GTTGTGTAAC CGTGACCACA 720
 GTCAATTTTA GAACATTTTC TTACCCCAA AAGAAACCCT GTACCCTTGA GCAGTCACCT 780
 60 CTCATTTTCT CCCAGTGCCC ACCCCATCCC CGAGCCCKG GAACCACTAA TCTATTTCTC 840

TCTCTGTAGA TTTGCTTATT CTGGTCATTT CATATAAATG GAATTCTACA ATATTTCGGTC 900
 TTTTGGGACT GGCTTCCCAA ATATGATTTT CTATATGGAG TGAGAAAATT CTTCCTCATCT 960
 -5 TGAGAACTCT TATTGCTGTG AAAGGGAGTG GTTGGTAAAA TCAATAGATT TCAGGCAAGA 1020
 GGGCCAGATA CCTAACAGGT TTTTCTCCGT GAATCTTATG CTGAGTAGTT TTTCTCATA 1080
 10 ACCAAGCATT TATGATATAT TACTACTTAT AATACTGTGG CTAGTCTCTA GAATGGATGT 1140
 TGAAATCTTT GCCTCCTCAG TCGGGAAGAG TCCTGCTAAA AATCAGGCTA AAAATCAGGC 1200
 CAAAAATCAG GCCAAATGAC TTGGCAAATA ATGACAAAG TGGTTTTCAC GTGTGTCTAT 1260
 15 CTTTGCTAGC AGCTTGATA CCTCAGGCCA GGTGAGCTCC CCAAATTTCT TTTTTCATTT 1320
 ACTCCAGTGA GTTCTGCTG TCTTTTTCAA GTATGTACCA TAGGACTTAA AGGTGATTGT 1380
 20 GATGCGTTGT AACACTGCTA AATATGCTAA GTACAGAATT TTATCTACAG TACTGTGAGA 1440
 CAGTCAATTA TTGCCTAGGG TAGTTCAAAA ATATGATGTG AGCTAGTTAA GCCTTTGCTT 1500
 GACTGATTTC AGTGATATTC AGAAGTGTGT ACCAATCAAG GCTCTTTAAA ATACGGAACG 1560
 25 ACTCACTTAA TAACCAGGA ACCAGCCAAA TACTGTGCAG CCGCAGAATA TGCATATCAA 1620
 TGAGTTGGAG GTGATTATTC TCTGTAATC CTAATGATT GTTTTCTAAG CATGTGGCT 1680
 30 TCTCAGTGGC TTGACAGCAT CTTCCTGGTT GTATGTGGCC TGTTTACATG ATGTATTGAA 1740
 TAATGTTGTT TGTGTGAGC ATCAATGCCT GTAACACCAA ACTAAACACG TGTTTTGGG 1800
 ATATGTTTCC AATCTTTAAA TGACCTTGCC CTGTCCAATA AATAAATGAT TGTCTCACCC 1860
 35 TGTAAAAAA AAAAAAATT AAAAAACTG GGNGGGGGC CCGGTACN 1908

40

(2) INFORMATION FOR SEQ ID NO: 40:

(i) SEQUENCE CHARACTERISTICS:

45

- (A) LENGTH: 458 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 40:

50

CCTCAAAAAA AAAAANGAAA GGAAAGAGGT CTCTACACAA GCCCGTGATT CTTCATGGCA 60
 AGGGATAACA TCAGAAATGT TTCATTTYCK GCTATTAGTT TCCATTCTTT TCCCCATCCA 120
 55 GGCATAAAGA GAAACAAAAG ACAATGATGG TATTCTCTGT GTCCTCAGCT TTGGCACTTT 180
 TGTGATGTT GCTAAGGAGC AGTGACCTTG CTAAAAAGAC TGAATAATCC ACCCACTGAA 240
 TAGCTAACCT GGGGAGGAAA TGAAATTTTC CTTTGTGGAT CTCCCCAAAT CCATTGTTGT 300

60

CACCAGGCCC TCCAGAACCC TCCTCAGTTC CPTCACAGTG CAACCCCTGTG TACTTGCCCC 360
GCAACCCAAT AGTATTGTGC CTCACCTCAC CPTCCATGGG CAACTGCCCT CCCTTCTGGA 420
-5 CATAAAACCT CATATTTTAA ATNAAGTTGA AATTTGAA 458

10 (2) INFORMATION FOR SEQ ID NO: 41:

(i) SEQUENCE CHARACTERISTICS:

15 (A) LENGTH: 1153 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 41:

20 GGCACAGAGC CTCGACCCA GGTGGTCTGG AGCCTGCCGG GAGAGTGGTG GCATCTGAGA 60
GGCTGGTCTG GGAATGTGGT TGGGGGAGGT GGGAGCTGTT TTAACCGTGT GCCCCTCTC 120
CTGTGCCGGC GTGGGCATCC CCCGGGGCAG TGAACCCGG GCGCTCCTCC AGCTTCCGAG 180
25 TCCAGCCAGC CTGGGCGCGG GCGCGCCCC GAGACACCCG AGGAGTCCGT TCCTCCCTGG 240
TTACGTGGAC TGTGGAGCTG GTCTCTTGTG GCTCAGCGCC GTGCGGAGGT TGAAGCGTAC 300
30 CTGCGGAGGT CGCACCAGG CGTGAGGAGG AGGAGGAAGG GCATGAGCCG AGCTTGAGGA 360
ATCCGTGCTC CAAACTCTAC ACTCAAGGAT GCACTGCGCA ACTCTGGTGG CGATGGGCTG 420
GGGAGATGT CCTTGGAGTT CTACCAGAAG AAGAAGTCTC GCTGGCCATT CTCAGACGAG 480
35 TGCATCCCAT GGAAGTGTG GACGGTCAAG GTGCATGTGG TAGCCCTGGC CACGGAGCAG 540
GAGCGGCAGA TCTGCCGGA GAAGGTGGGT GAGAACTCT GCGAGAAGAT CATCAACATC 600
40 GTGGAGGTGA TGAATCGGCA TGAGTACTTG CCCAAGATGC CCACACAGTC GGAGGTGGAT 660
AACGTGTTTG ACACAGGCTT GCGGGACGTG CAGCCCTACC TGTACAAGAT CTCCTTCCAG 720
ATCACTGATG CCCTGGGCAC CTCAGTCACC ACCACCATGC GCAGGCTCAT CAAAGACACC 780
45 CTGCCCTCTG AGCGTCGCTG GATCTCTGGG AGCTCCTTGA TGGCTCCAG ACCTTGGCTT 840
TTGGGAATTG CACTTTTGGG CCTTTGGGCT CTGGAACCTG CTCTGGGTCA TTGGTGAGAC 900
50 TTGGAAGGGG CAGCCCCCGC TGGCTTCTTG GTTTTGTGGT TGCCAGCCTC AGGTCATCCT 960
TTTAATCTTT GCTGACGGTT CAGTCCTGCC TCTACTGTCT CTCCATAGCC CTGGTGGGT 1020
CCCCCTTCTT TCTCCACTGT ACAGAAGAC CACCACTGGG ATGGGGAATA AAGTTGAGAA 1080
55 CATGAGTTTG GGCTGAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA 1140
AAAAAAAAA AAA 1153

(2) INFORMATION FOR SEQ ID NO: 42:

-5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1983 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

10

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 42:

	GGCACGAGAG GGGCCGAGCC GACAAGATGT TCTTGCTGCC TCTTCCGGCT GCGGGGCGAG	60
15	TAGTCGTCCG ACGTCTGGCC GTGAGACGTT TCGGGAGCCG GAGTCTCTCC ACCGCAGACA	120
	TGACGAAGGG CCTTGTTTTA GGAATCTATT CCAAAGAAAA AGAAGATGAT GTGCCACAGT	180
	TCACAAGTGC AGGAGAGAAT TTTGATAAAT TGTTAGCTGG AAAGCTGAGA GAGACTTTGA	240
20	ACATATCTGG ACCACCTCTG AAGGCAGGGA AGACTCGAAC CTTTTATGGT CTGCATCAGG	300
	ACTTCCCCAG CGTGGTGCTA GTTGGCCTCG GCAAAAAGGC AGCTGGAATC GACGAACAGG	360
25	AAACTGGCA TGAAGGCAAA GAAAACATCA GAGCTGCTGT TGCAGCGGGG TGCAGGCAGA	420
	TTCAAGACCT GGAGCTCTCG TCTGTGGARG TGGATCCCTG TGGAGACGCT CAGGCTGCTG	480
	CGGAGGGAGC GGTGCTTGGT CTCTATGAAT ACGATGACCT AAAGCAAAAA AAGAAGATGG	540
30	CTGTGTCGGC AAAGCTCTAT GGAAGTGGGG ATCAGGAGGC CTGGCAGAAA GGAGTCCTGT	600
	TTGCTTCTGG GCAGAACTTG GCACGCCAAT TGATGGAGAC GCCAGCCAAT GAGATGACGC	660
35	CAACCAGATT TGCCGAAATT ATTGAGAAGA ATCTCAAAAG TGCTAGTAGT AAAACCGAGG	720
	TCCATATCAG ACCCAAGTCT TGGATTGAGG AACAGGCAAT GGGATCATTG CTCAGTGTGG	780
	CCAAAGGATC TGACGAGCCC CCAGTCTTCT TGGAAATTCA CTACAAAGGC AGCCCCAATG	840
40	CAAACGAACC ACCCCTGGTG TTTGTTGGGA AAGGAATTAC CTTTGACAGT GGTGGTATCT	900
	CCATCAAGGC TTCTGCAAAT ATGGACCTCA TGAGGGCTGA CATGGGAGGA GCTGCAACTA	960
45	TATGCTCAGC CATCGTGTCT GCTGCAAAGC TTAATTTGCC CATTAAATATT ATAGGTCTGG	1020
	CCCCTCTTTG TGAAAATATG CCCAGCGGCA AGGCCAACAA GCCGGGGGAT GTTGTTAGAG	1080
	CCAAAACGG GAAGACCATC CAGGTTGATA ACACTGATGC TGAGGGGAGG CTCATACTGG	1140
50	CTGATGCGCT CTGTTACGCA CACACGTTTA ACCCGAAGNT CATCCTCAAT GCCGCCACCT	1200
	TAACAGGTGC CATGGATGTA GCTTTGGGAT CAGGTGCCAC TGGGGTCTTT ACCAATTCAT	1260
55	CCTGGCTCTG GAACAACTC TTCGAGGCCA GCATTGAAAC AGGGGACCGT GTCTGGAGGA	1320
	TGCCTCTCTT CGAACATTAT ACAAGACAGG TTGTAGATTG CCAGCTTGCT GATGTTAACA	1380
60	ACATTGGAAG ATACAGATCT GCAGGAGCAT GTACAGCTGC AGCATTCCTG AAAGAATTCTG	1440

	TAATCATCC TAAGTGGGCA CATTTAGACA TAGCAGGCGT GATGACCAAC AAAGATGAAG	1500
	TTCCCTATCT ACGGAAAGGC ATGACTGGGA GGCCCAACAG GACTCTCATT GAGTTCCTAC	1560
-5	TTCGTTTCAG TCAAGACAAT GCTTAGTTCA GATACTCAAA AATGTCTTCA CTCTGTCTTA	1620
	AATGGACAG TTGAACTTAA AAGGTTTTTG AATAAATGGA TGAAAATCTT TTAACGGAGA	1680
10	CAAAGGATGG TATTTAAAAA TGTAGAACAC AATGAAATTT GTATGCCTTG ATTTTTTTTTT	1740
	CATTTACAC AAAGATTAT AAAGGTAAAG TTAATATCTT ACTTGATAAG GATTTTAAAG	1800
	ATACTCTATA AATGATTAAA ATTTTGTAGAA CTTCTAATC ACTTTTCAGA GTATATGTTT	1860
15	TTCATTGAGA AGCAAAATTG TAACTCAGAT TTGTGATGCT AGGAACATGA GCAAACTGAA	1920
	AATTACTATG CACTTGTGAG AAACAATAAA TGCAACTTGT TGTGCAAAAA AAAAAAAAAA	1980
20	AAA	1983

25 (2) INFORMATION FOR SEQ ID NO: 43:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1406 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 43:

35	ATGATGATGA CTTTGAAGAC GATTTTATTC CTCTTCTCC AGCTAAGCGC CTTGAGGTTA	60
	ATAGTTGGAA AAGACTCTAT AGATATTGAC ATTTCTTCAA GGAGAAGAGA AGATCAGTCT	120
	TTAAGGCTTA ATGCCTAAGC NCTTGGTCTT AACTTGACCT GGGATAACTA CTTTAAAGAA	180
40	ATAAAAAATT CCAGTCAATT ATTCTCAAC TGAAAGTTTA GTGGCAGCAC TTCTATTGTC	240
	CCTTCACTTA TCAGCATACT ATTGTAGAAA GTGTACAGCA TACTGACTCA ATTCTTAAGT	300
45	CTGATTGTG CAAATTTTAA TCGTACTTTT TAAATAGCCT TCTTACGTGC AATTCTGAGT	360
	TAGAGGTAAA GCCCTGTTGT AAAATAAAGG CTCAAGCAAA ATTGTACAGT GATAGCAACT	420
	TTCCACACAG GACGTTGAAA ACAGTAATGT GGCTACACAG TTTTPTTAAC TGTAAGAGCA	480
50	TCAGCTGGCT CTTTAATATA TGAATAAACA ATAATTTAAA ACAAATCATA GTAGCAGCAT	540
	ATTAAGGGTT TCTAGTATGC TAATATCACC AGCAATGATC TTTGGCTTTT TGATTTATTT	600
55	GCTAGATGTT TCCCCCTGG AGTTTTGTCA GTTTCACACT GTTTGCTGGC CCAGGTGTAC	660
	TGTTTGTGGC CTTTGTAAAT ATCGCAAACC ATTGGTTGGG AGTCAGATTG GTTCTTAAA	720
	AAAAAAAAA AAAACGACAT ACGTGACAGC TCACTTTTCA GTTCATTATA TGTACCGAGG	780
60	GTAGCAGTGT GTGGGATGAG GTTCGATACA GNCGTATTTA TTGCTTGTCA TGTAATTA	840

AAACCTTGTA TTAACTCTT TTCAATCCTT TTAGATAAAA TTGTTCTTTG CAAGAATGAT 900
 TGGTGCTTAT TTTTTCAAAA ATTTGCTGTG AACAACTGA TGACAACAAG CAACATTTAT 960
 -5 CTAATGAACT ACAGCTATCT TAATTTGGTT CTTCAAGTTT TCTGKTGCAC TTGTAAAATG 1020
 CTACAAGGAA TATTAATAAAA ATCTATTCAC TTAACTTTAT AATAGTTTAT GAAATAAAAA 1080
 10 CATGAGTCAC AGCTTTTGTT CTGTGGTAAC CTATAAAAAA AGTTTGTCTT TGAGATTCAA 1140
 TGTAAGAAGC TGAAAACAAT GTATATGTTG TAAATATTTG TGTGTTGTGA GAAATTTTGT 1200
 TCATAAGAAA TTAAGAAGC TTACCAGGAA GGTTTTAAAG TTAGAAATAT TCCATGCCAA 1260
 15 TAAAATAGGA AATTATAAAT ATATAGTTT AAGCCTGCAT CAGTGGGAGT CTTGGCTATG 1320
 TAGTTATGTA GTTATTATGN AACCACCAAG ATTTTTTTGG CTATTTACCG TAACCAAAGG 1380
 20 GGCCGATTAA NTGGTTTGAA GNCTTG 1406

25 (2) INFORMATION FOR SEQ ID NO: 44:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1391 base pairs

(B) TYPE: nucleic acid

30 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 44:

35 GGGCTGAAG GCGGCRGCGC AGTCCCGAGC AGTGCTCGCT CCTGCTCGGG GCGCTCGGGC 60
 CCCGGGCGTC GCCATGACCA GTGAGCTGGA CATCTTCGTG GGAACACGA CCCTTATCGA 120
 CGAGGACGTG TATCGCTCTT GGCTCGATGG TTAATCGGTG ACCGACGCGG TGGCCCTGCG 180
 40 GGTGCGCTCG GGAATCCTGG AGCAGACTGG CGCCACGGCA GCGGTGCTGC AGAGCGACAC 240
 CATGGACCAT TACCGCACCT TCCACATGCT CGAGCGGCTG CTGCATGCGC CGCCCAAGCT 300
 45 ACTGCACCAG CTCATCTTCC AGATTCCGCC CTCCCGGCAG GCACTACTCA TCGAGAGGTA 360
 CTATGCCTTT GATGAGGCCT TTGTTGCGGA GGTGCTGGGC AAGAAGCTGT CCAAAGGCAC 420
 CAAGAAAGAC CTGGATGACA TCAGCACCAA AACAGGCATC ACCCTCAAGA GCTGCCGGAG 480
 50 ACAGTTTGAC AACTTTAAAC GGTCTTCAA GGTGGTAGAG GAAATGCGGG GCTCCCTGGT 540
 GGACAATATT CAGCAACACT TCCTCCTCTC TGACCGGTTG GCCAGGGAAT ATGCAGCCAT 600
 55 CGTCTTCTTT GCTAACAACC GCTTTGAGAC AGGGAAGAAA AACTGCAGT ATCTGAGCTT 660
 CGGTGACTTT GCCTTCTGCG CTGAGCTCAT GATCCAAAAC TGGACCCTTG GACCCGTCGA 720
 60 CTCACAGATG GATGACATGG ACATGGACTT AGACAGGAAT TTCTCCAGGA CTTGAAGGAG 780

CTCAAGGTGC TAGTGGCTGA CAAGGACCTT CTGGACCTGC ACAAGAGCCT GGTGTGCACT 840
 GCTCTCCGGG AAAGCTGGGC GTCTTCTCTG AGATGGAAGC CAACTTCAAG AACCTGTCCC 900
 5 GGGGGCTGGT GAACGTGCCG CCAAGCTGAC CCACAATAAA GATGTCAGAG ACCTGTTTGT 960
 GGACCTCGTG GAGAAGTTTG TGAACCCCTG CCGCTCCGAC CACTGGCCAC TCAGCGACGT 1020
 GCGGTTCTTC CTGAATCAGT ATTCAGCGTC TGTCCAATCC CTCGATGGCT TCCGACACCA 1080
 10 GGCCCTCTGG GACCGCTACA TGGGCACCTT CCGCGGTGTC CTCCTGCGCC TGTATCATGA 1140
 CTGAGGTGCC TCCCAACGTC CGCCACGCT GACAATAAAG TTGCTCTGAG TTTGGAGACT 1200
 15 GGTCTCTGCT CCGGGGAGCA AGTGGGGGGC GTGCAGATGT GCCTGTGTCT GTCTCTGAGC 1260
 ACCTGGTGTC CGTGACAAG GATGGATGTG TNCNGTGGCT CCTTGGGAAC TGAGACATAT 1320
 CTCAGGAAT GGTGTCTGTG CTCAGCCCAT CCACCAGAAG AGTCTGCTCA CAAAAAAAAA 1380
 20 AAAAAAAAAA A 1391

25

(2) INFORMATION FOR SEQ ID NO: 45:

(i) SEQUENCE CHARACTERISTICS:

30

- (A) LENGTH: 1569 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 45:

35

GGCACGAGTG GAGATGGCTG CGGCCGTGGC GGGGATGCTG CGAGGGGGTC TCCTGCCCCA 60
 GGCGGGCCGG CTGCCTACCC TCCAGACTGT CCGCTATGGC TCCAAGGCTG TTACCCGCCA 120
 40 CCGTCGTGTG ATGCACCTTC AGCGGCAGAA GCTGATGGCT GTGACTGAAT ATATCCCCC 180
 GAAACCAGCC ATCCACCCAT CATGCCTGCC ATCTCCTCCC AGCCCCCACC AGGAGGAGAT 240
 AGGCCTCATC AGGCTTCTCC GCCGGGAGAT AGCAGCAGTT TTCCAGGACA ACCGAATGAT 300
 45 AGCCGTCTGC CAGAATGTGG CTCTGAGTGC AGAGGACAAG CTTCTTATTG CGACACCAGC 360
 TCGGGAACA CAAGATCCTG ATGAAGGTCT TCCCCAACA GTTCCTGAAA GCCCTTCCTG 420
 50 GAGGATCCA AGTACCAAAA TCTGCTGCCC CTTTTTGTGG GGCACAACAT GCTGCTGGTC 480
 AGTGAAGAGC CCAAGGTCAA GGAGATGGTA CGGATCTTAA GGGACTGTGC CATTCTTGCC 540
 GCTGCTAGGT GGCTGCATTG ATGACACCAT CCTCAGCAGG CAGGGCTTTA TCAACTACTC 600
 55 CAAGCTCCCC AGCCTGCCCC TGGTGCAGGG GGAGCTTGTA GGAGGCCTCA CCTGCCTCAC 660
 AGCCAGACC CACTCCCTGC TCCAGCACCA GCCCTCCAG CTGACCACCC TGTGGACCA 720
 60 GTACATCAGA GAGCAACGCG AGRAAGGATT CTGTCATGTC GGCCAATGGG AAGCCAGATC 780

	CTGACACTGT TCCGGACTCG TAGCCAGCCT GTTTAGCCAG CCCTGCCGAT AAATACACTC	840
5	TGCGTTATTG GCTGTGCTCT CCTCAATGGG ACATGTGGAA GAACTTGGGG TCGGGGAGTG	900
	TGTTTGTCAC TTGGTTTTC A TAGTAATGA TATTGTCAGG TATAGGGCCA CTTGGAGATG	960
	CAGAGGATTC CATTTTCAGAT GTCAGTCACC GGCTTCGTCC TTAGTTTTC CAACTTGGGA	1020
10	CGTGATAGGA GCAAAGTCTC TCCATTCTCC AGGTCCAAGG CAGAGATCCT GAAAAGATAG	1080
	GGCTATTGTC CCCTGCCCTCC TTGGTCACTG CCTCTTGCTG CACGGGCTCC TGAGCCACC	1140
15	CCCTTGGGGC ACAACCTGCC ACTGCCACAG TAGCTCAACC AAGCAGTTGT GCTGAGAATG	1200
	GCACCTGGTG AGAGCCTGCT GTGTGCCAGG CTTTGCTGCTG AGTGCTGTTA CATGTATTAG	1260
	TTCCTTTACT GCTGACCACA TTGTACCCAT TTCACAGAGA AGGAGCAGAG AAATTAAAGTG	1320
20	GCTTGCTCAA GGTCAATGAG TTAGTAAGTG GCAGAACAGG GACTTGAACC AAGCCCTCTG	1380
	CTCTGAAGAC CGCGTCTGA ATTTCTTCAC TAGAGCTTCC TCATCAGGTT ACCCAGAAGT	1440
25	GGGTCCCATC CACCATCCAG GTGTGCTTGG ATGTTAGTTC TCCACCCTCG AGGTGTACGC	1500
	TGTGAAAAGT TTGGGAGCAC TGCTTTATAA TAAAATGAAA TATATTCTAA AAAAAAAAAA	1560
	AAAAAAAAA	1569

30

(2) INFORMATION FOR SEQ ID NO: 46:

- 35 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1924 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - 40 (D) TOPOLOGY: linear

40

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 46:

	GGGCCCCCCC WCGWKPTMTT TTTTTTTTTT TTAAATTAGG ATAATGCCTT TATTAAACGAG	60
45	AATGAAACGT TCATTCTCTC TTCCACTCCT TCTCGTGGT TTTCTGGACA CAGCTCACCT	120
	GATCCTGCTA GAAACGTGT CAGTCTGCTT GTGGCTTCCC TCCTTGATTG ACTCACGCTG	180
50	TGTGATGTCT TGAGAAGTAT CTATCCACTT CATGTGAATG AGCACTCCAA TATCAGCCAA	240
	CATCAATCAT TCTTACCTAA AGAATAATAA GAAAAAGTTA ATATAAAGA CAAGGTATA	300
	AAATAAAGGT TTGAAAATGC TAGTCAACTT CAAAATTAA AGAGTAAAAA TCCAGAGATA	360
55	AAGATTGGGG GTAAGTTACA GCATAAAAAA ATAGGAAGAA ACTTCATGGT GGGGGGAAA	420
	TCTAAAATTA TTCTTACATA AAATAAGTAG ACACCTGAAT TAGAATGAAA ACTGTATTTT	480
60	CTTTAAATG TAAAAGCCTG ACTCTCAGTT TCACCAGTCT GAGCACAAGT TTGACTGCAA	540

CCAAATAT ACTATCCCTT ATGTGAAGGT ATGTGACAAC GTTGACCTCA CCAAATGAGT 600
 TTAAACATCA GCTCTTTTTT CATATGAAAG CACATACCCT GCTCCCCATT CAAGTATGTC 660
 5 TTCCATTGTC AGGCAGGCTG ACCACCTTCA GCAGGAGTCC TCCAAGAGTG CCCAACTCCC 720
 CTTCACACAG TACACAACGC TGTAGTTGTT GTCTGCAAT CCTTTGTATT TACCTCATTC 780
 10 TTCCCATCT AAGTCTCAC TGAGTTTAA AGTTAGGGCT GGAAAAGCTA TGCCTTACTG 840
 GGACAGCAAG GAACCAATTT TTTCTGAGG GAGAAGACAT TCACCTTCAC TATATGCCTG 900
 GCAGGGCCAC AGTGCACAAA ACAAGATCA GCCTTCATTC AAGTTCCAGG TTTTCTTCC 960
 15 TCCCTGAATG ATTACTGCAA AGGTATATG AAGTAAGAGT TCCCTGTTC ACATGTACCA 1020
 TCCATAAGGG ATACTATATC GTTTTGCAAT CTCCCCCA TTCTCCACAT TGTCTATCT 1080
 TAAGTCCAAG CCTTTTTCAC TCTCAAAAAA AAAAAAAAAA TATTTTTC AGCACTGGTG 1140
 20 TTCAAAGCA ACGTTTTAT GGTAAATGGT TTACCAGCAA CTGTGAGAT TTCCAGTTGA 1200
 GTCTTAAAAA TTGCCAATCA TTATCTAGCA GCAATGACAG ATGATTAGGA GCAGTCAAAT 1260
 25 CCTCTGAATT CTTCCCTAA TAGGCAGCCA TTTGAGAACT GCACTAGCTG ACATCACTAA 1320
 AACATTATCA GCTAAAGCCA AAACCAAATA AAGGCCAGA CCAACATCCT GGCTCTCTAA 1380
 AACCTGTCCA AAATCATTA GTGAAAGGCA GTAAATGCAG GACTGTGGAT CATGTCCTG 1440
 30 CAGCTGACAA TGATTAACAA TAGGAGACAT GCAACCCCA TTAAGGTAA AAGTCCAAA 1500
 CTAGTCACAC GCATCTCTT ATGGGGAAA AGTGAGACTA TTATGCATTC TTGGTAGGTT 1560
 35 TGCAACCTG CATGAAGAGC ACCCATGCA TTTCTTTCAT CTTTCAGAAA GCACCGGTAT 1620
 CTGTTCCAAG GGCCTAACAG TACGAAAATA CATTCTGGCA TCACACCTCT GAACCAAGA 1680
 CTGTTCTCAT TAAAAATAAT TTGGTTTGT AACAAATTA TGAAATACAA TGCAAGCACC 1740
 40 TCGGTATAGC ATTATTACTG AAACCACTTA ATCCAGCT TTTTGAGTTT TTTAAAAAA 1800
 CCCACTGCAC TAAGATTCAC AATTCATTC TACATACAAA TTAAAGCTAG TAAGAACACA 1860
 45 CTAACGTCAC AAGTTTCTCA TTCTAAAGTG CAAAAGCCTA ATCATCTGAA AGTGAACAGG 1920
 GTAA 1924

50

(2) INFORMATION FOR SEQ ID NO: 47:

55 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 475 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

60 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 47:

TGGTGTGGGG CCCAGAAAMC AAGGGACCAG TGAAAACAMC CCCAGAGACT TGTATCCGCC 60
 AGGAAAGCCA TTGCCAMTYC TGAGCCCTTG AAGGGCAAGG AGGGAAACAG TGTTACCAGA 120
 5 GCCCAGTAAG AACTGCTGTC ATGAAGGAGG GGCCACCTTG TAAGAGACAT CATTACTACC 180
 AGAACTGTGG TGCCAAATTG CTGGTGTCTC TCTTTGGAGA AACCAACCAG ATACATCTGC 240
 10 TGGAGACCCA GGTGGGCACA GAGAAGGGTG GAGAGAGAAT CTGGAAGAG AAATGGAGAA 300
 TAAGCAGCAC AGTGTATTTC ATTTCTGTAA ATTCTATGT AGAAGGCTCA GTGTTAGAAA 360
 TAAAGTTATT CTA CTAGTTG CAAGTTAAGT GTTCTGTITT GTTCTGCTTT CTGTTAGCA 420
 15 TAAGTAAACT CCTTTGGAA CTACACAGGT ATGTCTCTCC TTCAACATGT GTGAA 475

20

(2) INFORMATION FOR SEQ ID NO: 48:

(i) SEQUENCE CHARACTERISTICS:

25

- (A) LENGTH: 346 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

30

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 48:

AAGGGACAGA GACCTGGATT CAGATCTCAT TTTACAATGA AGACCCCAAT GCAGAAAGTC 60
 ATGTCTGAAA TTCTGAGCIT ACTCTTCTGC CTGCTGGGAC CTGCTCTGGA TGAGAGAAGG 120
 35 GAGGAAAAGG ACTAATCAGA GGAGCCAATG AAGTCACTCC ATGAGTTTCC TGAACCCTGC 180
 CCAGCTAGAG ATTAACGTYT GACCWTC AAC GTAGGACACT GTGCAGATGG CTACTTGCTG 240
 GCGCACATGA AGACCAAAGC CAGGACCAAG CCCMASCCCT GCTWAACACG GCAGARTCTT 300
 40 GCCCAGCCMA CYTCTGTGAR AATCTGCTTC CCTCCACAGC TGACCC 346

45

(2) INFORMATION FOR SEQ ID NO: 49:

(i) SEQUENCE CHARACTERISTICS:

50

- (A) LENGTH: 1366 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 49:

TAGGTGTCAG CCGCCACCCC CCCCCCATAT GCAGATTITAC TSGGCATGGT AGTGCCAGC 60
 TTCTAACACA GCTGGTATTT CAAGTCTCCT GGGACCTCAC TCAGGAATGA TACCCCTCA 120
 60 GTAGAAGCAG CAGGTGATCT TAACTCCTTT CAAAGAGCAG GCCTGTCTGG GAAGCCATGT 180

	CCTCAGCAGG CACAGCAACC CCTCTGAAA TGGATCACAA ACTCACTTCT CAGCCAGGCA	240
5	GGCCAAGCTT CTATTGTAAC AGTAGGCACA GTATAGTCGG ATCATCACAT CAGCTGGGTT	300
	TTTGGTTTAG TCATCTAGAG TCGTCTGGAC TAAAGGTCTT TCAGGTCTCC TTGCCCTGTG	360
	AGTGCGTGAA CCTCCCCACC CGAATTGCCT CAGTGTCTCT GAGCCTCATG TCTCTCCTGG	420
10	TGGTGGGCCA GGCCCTTGCA TGGGAAGGGA GCCTGCTGCG GGGCAGGCCA GCTGGGGGTG	480
	CTCACCTATG CGCAATGANA GTTATTGAAG GACTGGTTGT TGATGTTGGT GAGCGTATCC	540
15	TTTATGGCCA GCGCGAAGTC GGCCAGGTCA GCCAGGTGCT GCCAGCGCTC TCTCTCGGAC	600
	TTGTCTTCCT GTGCCAGGGG ACCGTGGAGA AAGTGTGAGG GGCCGCTCAC TGCAGCAGCC	660
	TGCTCTGCTG CCTTCCCTGG CAGTGTCTCT GGGGTGGATT CCCTACAMCT AGATGTTCAA	720
20	GGCCTTACTT TTCTTCCAC AAAGGAGTCG CAGCCACGCT AGCTCTGACT TGCCACTGTG	780
	ACAAAATTCA CGTAGCAGGT CTAGGCAAAG ACTGGGCAAT TGAGCAGAGG AGACGGACCT	840
25	GTGAGTCTGA CCRYGAGSCG GRCCCTTCA CCTTGGCTGG GCTGGTCTCT GTCTTAGGT	900
	TTTGTGAGGT TGTCTTGTG TGGATCCCTC AACTAGGTGA TAAGCACTGG AGGGGGATGA	960
	CCCGCTTGG ACGTGTCTCT TTAACCTCAT CCATATAATA GGGCCGTGGG ATGGTTGTAG	1020
30	AGGTAAAGCA GGATGATGGT GTTTAAGAC CAGAGCTTGG GACCAGGGCT CCTACACCTA	1080
	ATTTCTCTCT CTGGTAGCTG AACAAAGGTC TAAATTAGCT TAACAAAAGA ACAGGCTGCC	1140
35	GTCAGCCAGA GTTCTGAAGG CCATGCTTTC AGTTTCCCTT GTTGACAATT GCTCTCCAGT	1200
	TCCTATGAAA GCACAGAGCC TTAGGGGGCC TGGCCACAGA ACACAACCAT CTTAGGCCTG	1260
	AGCTGTGAAC AGCAGGGGGT TGTGTGTCTG TTCTGTTTCT CTGCTTGCCG AACTTTCTCA	1320
40	ATAAACCCCTA TTTCTTATTT ATAAAAAAA AAAAAAAA AAAAAA	1366

45 (2) INFORMATION FOR SEQ ID NO: 50:

(i) SEQUENCE CHARACTERISTICS:

- 50 (A) LENGTH: 1405 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 50:

55	GCAGTAATTC CTGTAGCCA CTGCATCCAC CAAACTAGT TTATTTTTC CCTCAAATTC	60
	ATGATTTTTA CGTCTGTTAC AAAGGGAATT TTGCTGATAG CTCTTTGGGT CCCACTGTTC	120
60	CATTTTATGC TAATAGATTC CATCTAGGG CCCAGCCGTC TCTTGAAGA TGGTGTTC	180

	TTTAACCCCTT GGCATGTATA ATAGAATTTT GGTGAATGAA AGAACCCAAA TAGGCCAGAT	240
	AGTCCCCCA GGCCTGATA TCCATAAAAG GCTTGGGAAT GCATTATGTA ATTGTCCCTA	300
5	GTCTTTTGT TGTTTTAGAA AAAAAAACA AGATGGGCTC AGATGGATGC CTACGTAAAA	360
	ATGGTTCCTA GCTGTGTACT CATAACTTTT CTTTGAATTG AGTAGTGAAA GGAAGGAGGA	420
10	GGAAAGGAAA TTAAATGTCC TTCTAGTATT CTCTGGACTC AAGTCTGACA TATGAGATAA	480
	TAACCTATAT TGAAATGCCA AGAATTGTAT CTGAAACAAG AGAACAGTTT GACACATTTA	540
	TCATGCCTTC ATATTACATA TTAAGTGAAA CCAATTAATA AACATATGAA ATATCCATTG	600
15	CACAAGGCAA AGGCACCTAA ACCTTTTGT TCTTTTCTA CATAGCAGAA ATTGATTTTT	660
	TTTTTATTTT TTTAGGGGAA CCTATATAAT TATGACCCAG TGATGTCITT TGGTGACTTA	720
20	AGCTTATGAA TTCAGGTAC AATTGAGTTG ATTCTAGATG GTTACTACCT TGAAAAGGAT	780
	GTTGGTGCCT TATGTGACAC GAGCCAGAGC CTGCTGGGA ATAAACAAAG CAGGTTCAT	840
	GCCAACACCA ACTCGTAGCT TTAGTGGGCA GATGGGGAGT GGTTCACAGA CTTCCCAAAA	900
25	TGTGGGGGCT TTGGGATTTT CCACACCATC CCACGTGTGT TGTTCATTTCT TCCTCTTTTC	960
	ACACTCTTGG ATGGATWATT TGRAAATGGT GRAAWYMMCY YYKRAATTTG CCCAATAGCC	1020
30	WTGRGCCACC ATTCTTWATG ACACCATAAC CAAATAGTTC CWTAAATGTTG AAATATTAGA	1080
	AACCTGTTAC CAGCCYKSMA KTWACCCWMA WPTTCCCAT GTTTGTGGAA TTGATATTGA	1140
	AATAGCAGGG CTAAGGAATT ACTGGCAAGT TTTAGCCTGT GGGTAATACC TTAGGGTAT	1200
35	TTAAATATTT GTAATTTTAT TTAAATGTTT ATGAATGTTT GAAAGGAACA AAATTATCAG	1260
	GGATGGCTCT TTGCCATGGG TCTTATTTTC ACCCTCTTTT CTGTAAGAAA AAAGAACAAT	1320
40	GTCTTAATGT ATTTTAAAG TTTTGGTAT AGTTTCTAAT TCCAATTTTA ATAAAAGTTT	1380
	TWRTAAAAA AAAAAAAAAA AAAAA	1405

45

(2) INFORMATION FOR SEQ ID NO: 51:

(i) SEQUENCE CHARACTERISTICS:

50

- (A) LENGTH: 504 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 51:

60

CGGATTTTCT AGGACCCCAA AAAAAAAAAA AGGGNAAAAA AAACCCNCAA AACCANCCAA	60
AACCCCAAAA AAAAAAAAAA TCCACAAAAA CAAAAAACT ATAAAAAGA AAGAATTAAA	120
AACTTTCAGA GAATTACTAT TTACTTTTATT AACTTACGGA TTTATTATAT AAATATATAT	180

TCACCTAGCA ACATATCTCT GCGTCTCTC CTGCTCTCAT AATGAAGACA TAGCCGATTC 240
 TCTGCCCCGG CCCCTTGCTG ATGCTCCTCC GGGTCTGCGT CGGGCGTGGG TCTCTGGGA 300
 5 CCTCCAGAG GTGGAGGTGG GCTGATGGCC TGGCTGCTG GTGGTTGATG GTTTTGCTCC 360
 CCTACCTTT TTTTTTTGAG TTTATTCTGA TTGATTTTTT TTCTTGTTT CTGGATAAAC 420
 10 CACCCCTCTGG GGACAGGATA ATAAAACATG TAATATTTTT AAGAAGGAAA AAAAAAAAAA 480
 AAAAAACTNG GGGGGGGCCC CGAA 504

15

(2) INFORMATION FOR SEQ ID NO: 52:

(i) SEQUENCE CHARACTERISTICS:
 20 (A) LENGTH: 777 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 52:

NAAGTATCTT GCCAGTTTA TTACAGAGGA CGATAAATGA TTCCATGTGG ATAGGCATA 60
 ACATACAGAG AATGAGACTA TGCCAGAAAT GGGAGGAGGC ATTTGAAACA ACATGAGTAT 120
 30 CTCAGGGACA GATGGATTGA TTCTGCTATT GGTAGGCCTG GAAGCAANGG TCAGAAGTAG 180
 CAAAAAATGG ATACCAAAAG CACTATTWGT CACCCAAGCT AAGTGAATA GCTGGCCAG 240
 35 TAGGAGAAAT GCAGGTTTGT CTCTACACTA AGTTCTCCAA CTCTTGATAA GCCTCCAAAA 300
 ACAAATGTTA GGGGAAAAAA ACGCAGCTGG TTATGAAAAG ATATATCTCA TTTCATTAAA 360
 AAATCAATGT CAATGCTGTT AATAGAATCC TTTTATCTTC AGGACAGAGG CAATGCCCTA 420
 40 AACAAACACC AGCTCAAGAG CCTCTGATGC CAACCTAGAG GGTACCCAAA CACAACTTA 480
 GCATAGAGGT AAGAATCTCT ATGCTTTTTG GTGGAGGCAA AGCCATTTGG TTGGTACTTC 540
 45 ACAGGAACAT CTTTCTACCA AGTCTTCATC ATATGGTATG TGCCACGAGT CTCCAGTTGT 600
 TTGCACCACT GTGTCATAGC TGAGAATACG CTGAAAGGTT AGTTTGTATC CTGAAACCT 660
 ATTTACAATT GCCAGCTGAT GTCCCTGCTG CCACTTAAAA AAGGCTTGGG TCTGGCATAG 720
 50 GCAGAMAGGC CTGTGGTCCC CTCGTGCCGA TTCTNGGCTC GAGGCCAATT NCCTTAT 777

55

(2) INFORMATION FOR SEQ ID NO: 53:

(i) SEQUENCE CHARACTERISTICS:
 60 (A) LENGTH: 602 base pairs
 (B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 53:

5 ATGACTACAG TGTATACCC TCCAATCTTT GCAGGTGGG ATGGAACACT GCTGTATCA 60
 CTCTGTGCAC GGTATAAATC CATATATCCA CAAAAACACA CATCCATCCA TCAACATATA 120
 10 CATGGTTTGG GATGAGCAGG TCAATAGTTT TGAGAGGGAG TTTGTTCCCT TTTTTTTTCT 180
 CATTATACTC TTAAATTGTT GTCAGTTATC AAACAAACAA ACAGAAAAAT TGTTTGGA 240
 AACCTTGCAT ACGCCTTTTC TATCAAGTGC TTTAAAATAT AGACTAAATA CACACATCCT 300
 15 GCCAGTTTTT TCTTACAGTG ACAGTATCCT TACCTGCCAT TTAATATTAG CCTCGTATTT 360
 TTCTCACGTA TATTTACCTG TGACTTGTAT TTGTTATTTA AACAGGAAAA AAAACATTCA 420
 20 AAAAAAGAAA AATTAACTGT AGCGCTTCAT TATACTATTA TATTATTATT ATTATTGTGA 480
 CATTTTGGAA TACTGTGGAA GTTTTATCTC TTGCATATAC TTTATACGGA AGTATTACGC 540
 CTTAAAAATA CGAAAATAAA TTTTACAAGG TTCCGGTTTT GGTGGTGGAA AGAGTAAATT 600
 25 GA 602

30

(2) INFORMATION FOR SEQ ID NO: 54:

(i) SEQUENCE CHARACTERISTICS:

35

(A) LENGTH: 1749 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 54:

40

AGTCACTGAC TTGGAGCCGC TCGGGGAAG TCCCGCCAG ACAGGCGGTG GGTGGGAATG 60
 CCTCACTTCA GTTTGAAGAG GGTCCGATC CAAAGGGTT AAAACGAGCG AACCCGATC 120
 45 CCCGACCACA CTTCCCGCCT CCCTAAAACG CACACCCCGC TAGCCATGGG CAGCCGCGAC 180
 CACCTGTTCA AAGTGCTGGT GGTGGGGGAC GCCGAGTGG GCAAGACGTC GCTGGTGCAG 240
 GATTATTCCC AGGACAGCTT CAGCAAACAC TACAAGTCCA CGGTGGGAGT GGATTTTGCT 300
 50 CTGAAGGTTT TCCAGTGGTC TGA CTACGAG ATAGTCCGGC TTCAGCTGTG GGATATTGCA 360
 GGGCAGGAGC GCTTACCTC TATGACACGA TTGTATTATC GGGATGCCTC TGCCTGTGTT 420
 ATTATGTTTG ACGTTACCAA TGCCACTACC TTCAGCAACA GCCAGAGGTG GAAACAGGAC 480
 CTAGACAGCA AGCTCACACT ACCCAATGGA GAGCCGGTGC CCTGCCTGCT CTTGGCCAAC 540
 AAGTGTGATC TGTCCCCTTG GGCAGTGAGC CGGGACCAGA TTGACCGGTT CAGTAAAGAG 600
 60

AACGGTTTCA CAGGTTGGAC AGAAACATCA GTCAAGGAGA ACAAAAATAT TAATGAGGCT 660
 ATGAGAGTCC TCATTGAAAA GATGATGAGA AATTCCACAG AAGATATCAT GTCTTTGTCC 720
 5 ACCCAAGGGG ACTACATCAA TCTACAAACC AAGTCTCTCA GCTGGTCTG CTGCTAGTAG 780
 TGTTTGGCTT ATTTTCCATC CCAGTTCTGG GAGGTCTTTT AAGTCTCTTC CCTTTGGTTG 840
 10 CCCACCTGAC CATTTTATTA AGTACATTG AATTGTCTCC TGACTACTGT CCAGTAAGGA 900
 GGGCCCATTG TCACTTAGAA AAGACACCTG GAACCCATGT GCATTTCTGC ATCTCCTGGA 960
 TTAGCCTTTC ACATGTTGCT GRCTCACATT AGTGCCAGTT AGTGCCCTCG GTGTAAGATC 1020
 15 TTCTCATCAG CCTCAATTT GTGATCCGGA ATTTTGTGAG AAGGATTAGA AATCAGCACC 1080
 TCGGTTTtag AGATCATAAT TCTCACCTAC TTCTGAGCTT ATTTTCCAT TTGATATTCA 1140
 20 TTGATATCAT GACTTCCAAT TGAGAGGAAA ATGAGATCAA ATGTCATTTT CCAAATTTCT 1200
 TGTAGGCCGT TGTTCAGAT TCTTCTGTC TTGGAATGTA AACATCTGAT TCTGGAATGC 1260
 AGAAGGAGGG GTCTGGGCAT CTGTGGATTT TTGGCTACTA GAAGTGTCCT AGAAGTCACT 1320
 25 GTATTTTGA AACTTCTAAC GTCATAATTA AGTTTCTCTT GTCTTGGCAT CAAGAATAGT 1380
 CAAGTTTTTT GGCCGGGCAT GGTGGCTCAT GCCKGTAATC CCAGCACTTG GGGAGGCCAA 1440
 30 GGCAGGCCGA TCACATGAGG CCAGGAATTC GAGACCAACC TGGTCAGCAT GGCAAAACCC 1500
 CGTCTCTACT AAAAGTACAA AAATTAGCCA GCGTGATGG CACGTGTCTG TAATCCCAGC 1560
 TACTCTGGAG ACTGAGGTGG GAGAATCGCT TGAGACTGGG AGGCAGAGGT TGCAGTGAAC 1620
 35 CGAGATCATG CCACCGCACT TCAGCCTGGG TGACAGAGAA GGACTCCGTC TCAAAAAAAA 1680
 AAAAAAAAAA AAAACTCGAG GGGGGGCCCC GTACCCAAAT CGCCSTGATA GTGATCGTAW 1740
 40 ACAATCNAA 1749

45 (2) INFORMATION FOR SEQ ID NO: 55:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1896 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 55:

55 AAAGAGATGG GCTCTTTATT TTCTCGAAAA ACCAATTTGG AGTTACTCAT TTTTCCATAA 60
 CATTAATTT CTTACAGTGA ACTACATATT GTCCATAAGT GCTTCATCAG GACTCATCGC 120
 CCTCTGTCT ACTGGCTCCA AATAGACCAT GTCAGCTTCA CCCCCTGGCT TTGTGTCTAT 180
 60 GGGTGGCCTG TGGTATATGG AAAAGTAGCA GGGTGGTCAG GGTGGGAGAC ACAAGATGTT 240

	TTTATAGTCT AGAGCCTTTA AAAAACCAG CAGAATGTAA TTCAGTATTT GTTTATTGGC	300
	TGTTTTTTGA CAGATTGTTG AAATTAAATG AATTGAAAGG GAAACTCAGA GTACTAGGAC	360
5	GTATTATATA AGGAAAAAAA TGTCTTGCAA TGTGCTGTAA TCACAAGAGG AGAAAATAAC	420
	TTGTTTCCTT GATCTGTCAG AGGTCACAGT AACCTGGGCC GAGCTGTTAT TATTTATTAT	480
10	ATAATAGTAG TAGGAAGTTA ATAACCTGGT CTCTGTGTTT CAAGCACAAT ATTACAACCT	540
	CTTTTGAACC GTAAATATCA GAATGAATCC TCTTCCAGG GGATTGAACA GAAGCTTAAT	600
15	GTTTACAAGT GTTTGAATTT GTGATCTGAA ATAACACAAA ATTAAAAACA TGATTTCTCT	660
	AATTTTCCAA CTAGAGGAAG AGAACTTGT GAAAAGTTC TTTTTTTTTC TTTTTTTTTT	720
	CTTAAAGAAG GGCAGCCAAG GTAGTAACCT AAAAATAGTG CCCAGGCATA TGAGAGTTGT	780
20	CCTACGAGGT TAAAGAACAC ACTGTTCCAC TGTATGGCTT TGGCCCTGAG TGGCCAGGGA	840
	GGTCAACTTG ACCCTGCCAT GTTGGTTTGA CTACTAAGA CACAGGAATC ATTGTTTTC	900
25	TTGACCAGG TCTCACACCC TGGAGGAATG TTAAGTAAGA GAAAGAACCT CTTCCTGAA	960
	TATTGACATG TAAAAGACCA AAGTAATTTT TCTGAACTTC TGCAATTCTG AGAACTCTCC	1020
	AAGGAATTTA CAGTGATTTT AGTGCTTGTC AGCATTTTTC CATGAGGACT TTCATACATT	1080
30	TGACTCTTTA GTTCACAGGT TCCCATTGAT TGTGAGCAAG ATATTTATCT CTTAGCCCT	1140
	TGGGGATCCA GCTGAGAGCA ATCTCTTGCA TTTTTTTACC CGTGATGTGA CAGATATCAT	1200
35	TTCTTGTTGA TGCCATGACT TGAAAAAGTT TGGGAAGCTC TTAGCAATA TCAGCTAAAA	1260
	GGATATGAAA TCACAGGTGA TAGCAGTTGT CATTCAGTAA TTTCCTACAA GCAGACCCCC	1320
	AAAGGAAATA TAGTCCTAAT CTTACTATC CACTTCTAAA TTTAATGTGA ATTCATACA	1380
40	TGTTATTAGT TGTTCCTTTT ATAATTTTAT AAAAATTATT CATCGGGAGT TTAACCTCCA	1440
	CTTCCATGCT ATCGGATGTG TTGGGCTCCA TGCAAGAACT TGAAGAAAA ACAGGCAGGA	1500
45	ATGCATTTGC ATAATGACCC AGATCATCAT TTCTGCAAC TGAGAATTAT ATTCATCAT	1560
	TGCTTCTAGA AGTCTGCAAT TCTTACTTTT TCTTTGGTGC ATTATTATCT AGGTGCCATC	1620
	ACTGGATAAT GTGGAGTGAC TAGAGAAGTC AYATATCACT GTAAGGTACA GTTAGGGGTA	1680
50	ACACTTTAGA GGTATTATTAT TTTTAAAAA CTTTCTTGA ACTCTGGGC CAACATGGGT	1740
	GAAACCCCGT CTCTTACTT AAAAATACCC AAAATTAGGC CAGGGCGTG GATGGGTGGG	1800
55	GTGCTGTGA ATCTTCAGCT ACTTNGGGGA GGGCTTGAAG CCAGGGAGGA ACTGCCCTGG	1860
	ANCCCCGGG NGGGCCAGNA GGTTCGCCAG TTGAGT	1896

(2) INFORMATION FOR SEQ ID NO: 56:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1753 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 56:

10	TCTTTTAAA ATAGACATTT GTGGGCTCA CACAATATAT GAAATAGTAC CCTCTAAAA	60
	AGAGAAAAAA AAAATCAGGC GGTCAAACCT AGAGCAACAT TGTCTTATTA AAGCATAGTT	120
15	TATTTCACTA GAAAAAATTT AATATCAAGG ACTATTACAT ACTTCATTAC TAGGAAGTTC	180
	TTTTTAAAT GACACTTAAA ACAATCACTG AAAACTTGAT CCACATCACA CCCTGTTTAT	240
20	TTTCCTTAAA CATCTTGGA GCCTAAGCTT CTGAGAATCA TGTGGCAAGT GTGATGGGCA	300
	GTAAATACC AGAGAAGATG TTTAGTAGCA ATTAAAGGCT GTTTCACCT TTAAGGACCA	360
	GCTGGGCTGT AGTGATTCTT GGGCCAGAG TGGCATTATG TTTTACAAA ATAATGACAT	420
25	ATGTCACATG TTTGCATGTT TGTTCGCTTG TTGAATTTT GAACAGCCAG TTGACCAATC	480
	ATAGAAAGTA TTACTTTCTT TCATATGGTT TTTGGTTCAC TGGCTTAAGA GGTTCCTCAG	540
	AATATCTATG GCCACAGCAG CATACCAGTT TCCATCCTAA TAGGAATGAA ATTAATTTTG	600
30	TATCTACTGA TAACAGAATC TGGGTCACAT GAAAAAAT CATTTTATCC GTCTTTAAG	660
	TATATGTTTA AAATAATAAT TTATGTGTCT GCATATTGCA GAACAGCTCT GAGAGCAACA	720
35	GTTCCCATTT AACTCTTTCT GACCAATAGT GCTGGCACC GTCCTTCCTC TTGGGAAGA	780
	GGAAAGGGTG TGTGAACATG GCTAACAATC TTCAAATACC CAAATTGTGA TAGCATAAAT	840
	AAAGTATTTA TTTTATGCCT CAGTATATTA TTATTTAATT TTTTAGGTAA TGCCTATCTC	900
40	TTGGTCTATT AAGGAAAGAA GCAATCAGTA GAGAATTCAG GATAGTTTGG TTAAATTTCT	960
	TGCAGATTAC ATGTTTTTAC AGTGGCCTGC TATTGAGGAA AGGTATTCTT CYATACAACT	1020
45	TGTTTAAACC TTTGAGAACA TTGACAGAAA TTATGCAATG GTTGTGAG ATACGGACTT	1080
	GATGGTGCTG TTTAATCAGT TTGCTTCCAA AGTGGCCTAC TCAAGAGGCC CTAAGACTGG	1140
	TAGAAATTAA AAGGATTTCA AAACTTTCT ATTCCTTTCT TAAACCTACC AGCAAACTAG	1200
50	GATTGTGATA GCAATGAATG GTATGATGAA GAAAGTTTGA CCAAATTTGT TTTTTTGTG	1260
	TTGTGTGTGT TTTGAATTTG AAATCATTCT TATTCCTTTT AAGAATGTTT ATGTATGAGT	1320
55	GTGAAGATGC TAGCGAACCT ATGCTCAGAT ATTCATCGTA AGTCTCCCTT CACCTGTTAC	1380
	AGAGTTTCAG ATCGGTCAC TATAGTATGT ATTTCTTTAG TAAGAATGTG TTAATAATTAC	1440
60	AATGATCTTT TAAAAAGATG ATGCAGTTCT GTATTTATTG TGCTGTGTCT GGTCTTAAGT	1500

GGAGCCAATT AAACAAGTTT CATATGTATT TTTCCAGTGT TGAATCTCAC AACTGTACT 1560
 TTGAAAATTT CCTTCCATCC TGAATAACGA ATAGAAGAGG CCATATATAT TGCCTCCTTA 1620
 5 TCCTTGAGAT TTTACTACCT TTATGTTAAA AGTTGTGTAT AATTGTTAAA ATCTGTGAAA 1680
 GAATAAAAAG TGGATTTAAA TTAATAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA 1740
 10 AAAAAAAGG GGG 1753

15 (2) INFORMATION FOR SEQ ID NO: 57:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1220 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 20 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 57:

25 GCGGAAGTTA CTGCAGCCGC GGTGTGTGTC TGTGGGAAG GGAGAAGGAT TTGTAAACCC 60
 CGGAGCGAGG TTCGTCTTAC CCGAGGCCGC TGCTGTCCG AGACCCCGG GTGAAGCCAC 120
 CGTCATCATG TCTGACCAGG AGGCAAAACC TTCAACTGAG GACTTGGGGG ATAAGAAGGA 180
 30 AGGTGAATAT ATTAACTCA AAGTCATTGG ACAGGATAGC AGTGAGATTC ACTTCAAAGT 240
 GAAAATGACA ACACATCTCA AGAACTCAA AGAATCATAC TGTCAAAGAC AGGGTGTTC 300
 AATGAATTCA CTCAGGTTTC TCTTTGAGGG TCAGAGAATT GCTGATAATC ATACTCCAAA 360
 35 AGAACTGGGA ATGGAGGAAG AAGATGTGAT TGAAGTTTAT CAGGAACAAA CGGGGGGTCA 420
 TTCAACAGTT TAGATATTCT TTTTATTTTT TTTCTTTTCC CTCAATCCTT TTTTATTTTT 480
 40 AAAAAAGATT CTTTGTAAAT GTGGTGTTC AAACGGAATT GAAACTGGC ACCCATCTC 540
 TTTGAAACAT CTGTAATTT GAATCTAGT GCTCATTATT CATTATTGTT TGTTTTCATT 600
 GTGCTGATTT TTGGTGATCA AGCCTCAGTC CCCTTCATAT TACCTCTCC TTTTAAAAA 660
 45 TTACGTGTGC ACAGAGAGGT CACCTTTTTC AGGACATTGC ATTTTCAGGC TTGTGGTGAT 720
 AAATAAGATC GACCAATGCA AGTGTTCATA ATGACTTTCC AATGGCCCT GATGTTCTAG 780
 50 CATGTGATTA CTTCACTCCT GACTGTGAC TTTCAAGTGG AGATGGAAGT TTTTCAGAGA 840
 ACTGAACTGT GGAAAAATGA CCTTTCCTTA ACTGAAGCT ACTTTTAAAA TTTGAGGGTC 900
 TGGACCAAAA GAAGAGGAAT ATCAGGTTGA AGTCAAGATG ACAGATAAGG TGAGAGTAAT 960
 55 GACTAACTCC AAAGATGGCT TCACTGAAGA AAAGCATTT TAAGATTTTT TAAAAATCTT 1020
 GTCAGAAGAT CCCAGAAAAG TTCTAATTTT CATTAGCAAT TAATAAGCT ATACATGCAG 1080
 60 AAATGAATAC AACAGAACAC TGCTCTTTTT GATTTTATTT GTACTTTTGT GCCTGGGATA 1140

TGGGTTTTAA ATGGACATTG TCTGTACCAG CTTCAATAAA ATAAACAATA TTTGTAAAAA 1200
TCAWAAAAAA AAAAAAAAAA 1220

5

(2) INFORMATION FOR SEQ ID NO: 58:

10

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1049 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

15

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 58:

TCGCGCCTGC AGACACAGCA TCTACTCAGC GTGGGTCACC TCTGTGAACA TCACTGACTG 60
CAAGCCTCCC TCAATTTCCTG GTGCAGCCCA TCAGGGACCC ACAGCGCCTG GGAGGATGGT 120
GCGGATCTTG GCCAATGGGG AAATCGTGCA GGACGACGAC CCCCAGGTGA GGACCACTAC 180
25 CCAGCCACCA AGAGGTAGCA TTCCTCGACA GAGCTTCTTC AATAGGGGCC ATGGTGCTCC 240
CCCAGGGGGT CCTGGCCCCC GCCAGCAGCA GGCAGGTGCC AGGCTGGGTG CTGCTCAGTC 300
CCCTTCAAT GACCTCAACC GGCAGTGGT GAACATGGGC TTTCCGCAGT GGCATCTCGG 360
30 CAACCATGCT GTGGAGCCGG TGACCTCCAT CCTGCTCCTC TTCCTGCTCA TGATGCTTGG 420
TGTTCGTGGC CTCTCCTGG TTGGCCTTGT CTACCTGGTG TCCCACCTGA GTCAGCGGTG 480
35 ACCTCTGAGG GCTGATAGGG GTGGGTTTGT TGAGAGGGAC TTGCTGGGCC TTGGTGTGAG 540
AGCAGGCATA TTTGGAGGGG ATCTGGTGGT GCCTTGAAGG TATGATCAGA GAGGGGACCA 600
CAGGTGTGTG TTTCCCTTT GTGTTAAGCG TGAGGCAGAG GGAGACGTTA GTCCCAGCAT 660
40 TTCCCAAAGT GTGGGTGGGT CCGTTGGTTC CCGAGATACT TTTAGGTGGT ATGGGGCCTG 720
CATTAAGTGG CACAAAATCA GAGCAAGAAA GCGATGCCCT TCCCAATTCT CTCAATCCTT 780
45 TTATGCCGAG AAGATCTCAG CTGGATGCCA ACATGTTCCG ATGCCTGTGG AAGACATGCC 840
GACGTCTCCT CTGCCTAGGG AGCAGGACTT GGGCTTAGGG CAGGTGAAA AAATTCCAGA 900
CTTTTTTAGC ACTGTTTTTG TTTAATGGT ATATTTTAT TGGCTACTTT ATTGTTTAGG 960
50 ACAAGTGGTA GTGCATTCT ATTTATGTG ACCTTTTCAA TAAATAGATT TAAGTAAAAA 1020
AAAAAAAAA AAAACTCGAG GGGGGGCC 1049

55

(2) INFORMATION FOR SEQ ID NO: 59:

60

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1776 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

5

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 59:

	AAAGAGGATG TGMAGCTAGA GGTCCCCGAT GGCTGGTCCG ATGGGAAGCA CAAGGCTGAG	60
10	GGACTGGATT GTAAAGGCAC TAAGTCGTTT TCGCGTGAGA ATCAGACATG GGGGACCTCT	120
	AGCTTCACAT CCTCTTTTCCT TGCAGSTCTG GACATCCTGA GCCCAAGTCC CCCACACTCA	180
15	GTGCAGTGAT GAGTGCAGAA GTGAAGGTGA CAGGGCAGAA CCAGGAGCAA TTTCTGCTCC	240
	TAGCCAAGTC GGCCAAGGGG GCAGCGCTGG CCACACTCAT CCATCAGGTG CTGGAGGCCC	300
	CTGGTGCTTA CGTGTTTGGA GAACTGCTGG ACATGCCCAA TGTTAGAGAG CTGGCTGAGA	360
20	GTGACTTTGC CTCTACCTTC CGGCTGCTCA CAGTGTTTGC TTATGGGACA TACGCTGACT	420
	ACTTAGCTGA AGCCCGGAAT CTTCTCCAC TAACAGAGGC TCAGAAGAAT AAGCTTCGAC	480
25	ACCTCTCAGT TGTCAACCTG GCTGCTAAAG TAAAGTGTAT CCCATATGCA GTGTGCTGG	540
	AGGCTCTTGC CCTGCGTAAT GTGCGGCAGC TGGAAGACCT TGTGATTGAG GCTGTGTATG	600
	CTGACGTGCT TCGTGGCTCC CTGGACCAGC GCAACCAGCG GCTCGAGGTT GACTACAGCA	660
30	TCGGGCGGGA CATCCAGCGC CAGGACCTCA GTGCCATTGC CCGAACCCTK AANAAAAACC	720
	ATTAAAGTTA CGACGGCAGC AGCAGCCGCA GCCACATCTC AGGACCCTGA GCAACACCTG	780
35	ACTGAGCTGA GGAACACAGC TCCTGGCACC AACCAGCGCC ASCCAGCAAG AAAGCCTCAA	840
	AGGGCAAGGG GCTCCGAGGG ANCGCCAAGA TTTGGTCCAA GTCGAATTGA AAGRACTGTC	900
	GTTTCCTCCC TGGGGATGTG GGGTCCCAGC TGCCTGCCCTG CCTCTTAGGA GTCTCTAGAG	960
40	AGCCTTCTGT GCCCCTGGCC AGCTGATAAT CCTAGGTTCA TGACCCTTCA CCTCCCCTAA	1020
	CCCCAAACAT AGATCACACC TTCTCTAGGG AGGAGKCAAA TGTAGGTCAT GTTTTGTGTG	1080
45	GTACTTCTGT TTTTGTGTGA CTTTATGTGT TCCATGTCTC CCCGCTGCCA TGCTCTCTCC	1140
	CTTGTTCCTT TAAGAGCTCA GCATCTGTCC CTGTTTATTA CATGTCATTG AGTAGGTGGG	1200
	TAGCCCTGAT GGGGGTGGCT CTGTCTGGAG CATAACCCAC AGGCGTTTTT TCTGCCACCC	1260
50	CATCCCTGCA TGCCTGATCC CCAGTTCCTA TACCCTACCC CTGACCTATT GAGCAGCCTC	1320
	TGAAGAGCCA TAGGGCCCCC ACCTTTACTC ACACCCTGAG AATTCTGGGA GCCAGTCTGC	1380
55	CATGCCAGGA GTCAGTGGAC ATGTTTATCC TAGAATCCTG TCACACTACA GTCATTTCTT	1440
	TTCTCTCTTC TGGCCCTTGG GTCCTGGGAA TGCTGTGCTT TCAACCCAG AGCCTAAGAA	1500
	TGGCAGCCGT TTCTTAACAT GTTGAGAGAT GATTCTTTCT TGGCCCTGGC CATCTCGGGA	1560
60	AGCTTGATGG CAATCCTGGA AGGGTTTAAT CTCCTTTTGT GAGTTTGGTG GGAAGGGAA	1620

GGGTATATAG ATTGTATTAA AAAAAAAG GTATATATGC ATATATCTAT ATATAATATG 1680
 .5 ACGCAGAAAT AAATCTATGA GAAATCTATC TACAAAMWAA AAAAAAAAAA AAAAAAAAAA 1740
 AGGAATTCGA TNTCAAGCTT ATCGATACCG TCNACC 1776

10

(2) INFORMATION FOR SEQ ID NO: 60:

(i) SEQUENCE CHARACTERISTICS:

15

(A) LENGTH: 443 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 60:

20

ACAGATAAAT AAATAAATAA TAAATTAAAT TAAATAAAAA ATCTGAGCTA ATCTGAATAA 60

ATTGAGAGAT TTCACATGAA AGCCAGGATT TCTGGCTTCC CAGGAACAGT CAGAAGAGCT 120

25

AGCTAGCAAC ACTGGTCTGC TTGGCTACCT TCTTTGGAAC AACATGAAAT CTAGCTCCCT 180

TTTTTTTTTT TTTTGGCCC ACTTCATCCA TTCACATGAC CTGCCTGGCC TCTGCAGGTA 240

30

AGTGAGTATG CAACAAAAAT GTAGCACAGG TTTTGTGCGT GAACTACGTG GTTTCAGGTC 300

CAGCTCTGCC ACTTGCTAGC ATGACCTCGT GCCGAATTCC NGCACGAAGT TTTTTTTTTT 360

TTTTTCAGTG CTCCAGTCCC CCTATTGGAG AATCCTGCCC CCCCCTGGGA CAGAATGTTT 420

35

ACCCTGGCCC CGCGANTCCC TGA 443

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(2) INFORMATION FOR SEQ ID NO: 61:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2888 base pairs

(B) TYPE: nucleic acid

45

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 61:

50

TTAATGTTGT CAATAACCAC CAGGCCAAAC AGAATTTATA TGACCTGGAT GAAGATGATG 60

ATGGTATAGC TTCCGTTTCT ACTAACAGA TGAAGTTTGC AGCCTCAGGC GNCTTTCTCC 120

55

ACCACATGGC TGGGCTAAGC AGTTCCAAGC TTTCCATGTC CAAGGCCCTC CCTCTCACCA 180

AAGTGGTTCA GAATGATGCA TACACAGCTC CTGCTCTCCC TTCCTCTATT CGAACAAAAG 240

CCTTGACCAA CATGTCCCGG AACTGGTGA ACAAGGAAGA ACCCCCCAAA GAGCTGCCAG 300

60

CTGCTGAGCC TGTCTCAGC CCAATTGGAAG GCACCAAGAT GACTGTGAAT AATCTGCACC 360

	CTCGAGTCAC TGAGGAGGAC ATTGTTGAGC TTTTCTGTGT GTGTGGGGCC CTCAAGCGAG	420
- 5	CTCGACTGGT CCATCCTGGG GTAGCGGAGG TGGTGTTTGT GAAAAAGGAC GATGCCATCA	480
	CCGCATATAA GAAGTACAAC AACCGGTGTC TGGACGGGCA GCCGATGAAG TGCAACCTTC	540
	ACATGAATGG GAATGTTATC ACCTCAGACC AGCCCATCCT GCTGCGGCTG AGTGACAGCC	600
10	CATCAATGAA AAAGGAGAGC GAGCTGCCTC GCAGGGTGAA CTCTGCCTCC TCCTCCAACC	660
	CCCCTGCTGA AGTGGACCCT GACACCATCC TGAAGGCACT CTTCAGTCC TCAGGGGCTT	720
15	CTKTGACCAC GCAGCCACA GAATTCAAAA TCAAGCTTTG AGCAGGGGAG TGAGGCAGCC	780
	AGAAGTGGGG GCAGAGGAGG GTGGCTCTGT TTCCCCAAGG CAAAGCTTAT GACCAATGGG	840
	CCATCGGACT GGAGACCCCT GATTGTGGGA AGGGTTGCCA GGGATAAAGA GCTTCCTCAC	900
20	TGGATGGGAC CCGCCTTTCT GTGTGTGTGT CTGCCCTGTG CTCTCTCTC TACGTTAACG	960
	TTTCTGTAG TATGTTTCTT CATCTCATCG CCAAGGTAGG CTGTGTTTT TCAGTGTGTG	1020
25	CCTCCCCGAG CCTCAGCCCC AAGCTGATTT CTTATCTGGA AATGGTACAC TGAATTCTCT	1080
	GGGTGGCTTT CTGTGGGCC CATGGGATGC AGCGTGGGG CTGTCTGAAG GACCCCTGCTT	1140
	TTTCAGGGG CCGAGGGGCT GCCTTTCTTT TGTGTGTATT AAGCTTTTCA AACAATGGAG	1200
30	GGGATGGAGA GCCCTGGTGT CCTGACGGGA GCCAGGTCCG CCTGAGAGCT GTGCCGCTCC	1260
	TCTGTCTGT CAGTGGAGGT GCCTGGGTGG GGAGCAGGTC TCAGGCCTCT TGTCTCTCC	1320
35	CCAGTGGCTC CAGGCCTCAC TAGTGGCAAG GGCAGGATGA GGCTGCACCG CTGGGAAGAG	1380
	TCTATCTAAG YTCCTGGCTT GGAGTCCCGT GTCGTCTCCR CCCAGAGGAA GTTCTCCAGA	1440
	GTTACCTTT CCCTTTTCCT TGAGTTGTGC TGAATGCCCC ACCCCAGCTC TCTTTCCCTT	1500
40	CTGGGTGTCT TTGCTGGGAG GGGCTGTGT TGTGAGCCCT CCGGTTCCTC ACCTCGCCTG	1560
	GCACTTAACC ACACCCTGGT TTTGTGTAGC CGCCAGCTCT CTTCTGGTTG GGCCTTTGAA	1620
45	AGGCTCAGCC TCCCATGTG CAGTGCTTGG GTTTGGAGCT TATTTGAATG GAAGAGGTCA	1680
	GTTGTCTCT GGCTCTCCAT TTCTGGCCTC AGTGTCTAC AGGACAGTGG TCAGGGATGC	1740
	CTGGAGGCAT ATATCCAGCT GCCACCAAGG GGCAGTGTTC GTTCCACTT ATGTGAGTGA	1800
50	CCCCATCCAT CCATGACCAG AGGATTATTT TCCTGCCTTG GCAGAGGAGG AGGAGTCAAG	1860
	GGAGCAGGGC AGCTCTACCA GGCAAGGTGT TTCCCCAGCA TAGGCGCAGA CAGTTGGGAC	1920
55	GAAACTTCAG AGCCCAGGCA GTCCCTGAAT GACCAGGCCA GTGTGTCTAC TGAGTGGTCC	1980
	CCTGTGGTT GGGAGTGAAG AGAATCCAGG CTGGCAGAGC TGGAGCCAGT TGGGGAGCAC	2040
	GGTTCTGGGA GCTCTGCAAA ATCAGTAGCA AGTGTGGAA AAGGCACATG CCGAAGATAC	2100
60	TCAAGAGCTC CCAAGATTTG CTTGAGGCTA GCCCAGTGAA RAAAACCAGA GACTCATGTT	2160

TCCAGGGGTC AGTCTGTCAG GCAGGAAGGA CCCAGGATTT GAACCCAGCT TCAGTGTGCA 2220
 GGCTCTGAGG CTGCCCAGGA CGGGAAAGTC CAAGGAAGGG GCCTGGTGGT GCTCCACTTG 2280
 5 CAGTTCTTTA AAGAATGCTG CTTTTTATTC TCCTAACCCCT TTCAAGTGGG TGCAGACTTC 2340
 TCGTTAGCAG CTGGAAGACA TTCCTCCAC ACTTTTCCCT TCCTGGCCA AGAGAGCATC 2400
 10 CAGAAGGCAG TAGGACCTGG TTTTTCAGGT ACTGGGAGCC GGGGGCTCAC TGCTTGCACT 2460
 GTGCTTAGGG TAGGGATGGT AAATATCCTC CCTGCATGGC TTTATCCTCC CTCTCATCCC 2520
 15 AAAGCAGGTA TCTTCTGGTT GTCACAGAGT TTCATTGAGT CCAGCTGCAG CCACGTGGCC 2580
 ATCTGGAGCT GGTGCTATAG GTGACCATCT GGTACATTGA GGGGACCTGT TIGCCTCCTC 2640
 CACTCTATAA GCAGTCATCT TGGGAGACCG GGAGGAGAAG GTGGTGGGCT AGTCCTGTGT 2700
 20 CCTCCTCCAC TTCCCATGCC TCTATGTTAC CCATCTGTGT CTCCTGTGCA GAAGGAGAGG 2760
 AAGGGGCATT AAGAGATGAA GGGTGATTAT GTATTACTTA TCCATTTCTG AATAAACATT 2820
 25 TGTATTCTCT AAAAAAAAAA AAAAAAACT CGAGGGGGG CCCGGWACCC AWATCGCCSK 2880
 AAAGTGAG 2888

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(2) INFORMATION FOR SEQ ID NO: 62:

(i) SEQUENCE CHARACTERISTICS:

35

- (A) LENGTH: 1851 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 62:

40

CACTAGTATA ATTTATAATT ATAACCTATT CTGATTTCTT TTCAAATATT AGGTGTCCTA 60
 GTTGCCTATG AAGGTTTGCC ACTTCATCTT GCACTGTTCC CCAAACCTTG GACTGAGCTA 120
 45 TGCCAGACTC AGTCTGCTAT GTCAAAAAAC TGCATCAAGC TTTTGTGTGA AGATCCTGTT 180
 TTGCGAGAAT ATATTAAATG TATCCTAATG GATGAAAGAA CTTTTTTTAA CAACAACATT 240
 GTCTACACGT TCATGACACA TTTCTTCTA AAGGTTCAAA GTCAAGTGTT TTCTGAAGCA 300
 50 AACTGTGCCA ATTTGATCAG CACTCTTATT ACAAACCTGA TAAGCCAGTA TCAGAACCTA 360
 CAGTCTGATT TCTCCAACCG AGTTGAAATT TCCAAAGCAA GTGCTTCTTT AAATGGGGAC 420
 55 CTGAGGGCAC TCGCTTTGCT CCTGTCAGTA CACACTCCCA AACAGTTAAA CCCAGCTCTA 480
 ATTCCAACCTC TGCAAGAGCT TTTAAGCAAA TGCAGGACTT GTCTGCAACA GAGAACTCA 540
 CTCCAAGAGC AAGAAGCCAA AGAAAGAAAA ACTAAGATG ATGAAGGAGC AACTCCCAT 600

60

	AAAAGGCGGC GTGTTAGCAG TGATGAGGAG CACACTGTAG ACAGCTGCAT CAGTGACATG	660
	AAAACAGAAA CCAGGGAGGT CCTGACCCCA ACGAGCACTT CTGACAATGA GACCAGAGAC	720
5	TCCTCAATTA TTGATCCAGG AACTGAGCAA GATCTTCCTT CCCCTGAAAA TAGTTCTGTT	780
	AAAGAATACC GAATGGAAGT TCCATCTTCG TTTTCAGAAG ACATGTCAAA TATCAGGTCA	840
10	CAGCATGCAG AAGAACAGTC CAACAATGGT AGATATGACG ATTGTAAAGA ATTTAAAGAC	900
	CTCCACTGTT CCAAGGATTC TACCCTAGCC GAGGAAGAAT CTGAGTTCCC TTCTACTTCT	960
	ATCTCTGCAG TTCTGTCTGA CTTAGCTGAC TTGAGAAGCT GTGATGGCCA AGCTTTGCCC	1020
15	TCCCAGGACC CTGAGGTTGC TTTATCTCTC AGTTGTGGCC ATTCCAGAGG ACTCTTTAGT	1080
	CATATGCAGC AACATGACAT TTTAGATACC CTGTGTAGGA CCATTGAATC TACAATCCAT	1140
20	GTCGTCACAA GGATATCTGG CAAAGGAAAC CAAGCTGCTT CTTGACATTA GGTGTAGCAT	1200
	GTCTACTTTT AAGTCCCTCA CCCCCAACCC CCATGCTGTT TGTATAAGTT TTGCTTATTT	1260
	GTTTTTGTGC TTCAGTTTGT CCAGTGCTCT CTGCTTGAAT GGCAAGATAG ATTTATAGGC	1320
25	TTAATTCPTG GTCAGGCAGA ACTCCAGATG AAAAAAAGTT GCATCTTCAG TATACTTCCT	1380
	AAAGGGCAAT CAGATAATGG ATATGTTTTA TGTAAATTAAG AGTTCACTTT AGTGGCTTTC	1440
30	ATTTAATATG GCTGTCTGGG AAGAACAGGG TTGCCTAGCC CTGTACAATG TAATTTAAAC	1500
	TTACAGCATT TTTACTGTGT ATGATATGGT GTCTCTGTG CCAGTTTGTG ACCTTATAGA	1560
	GGCAGATTGC CTCGATCGC TGTGGTTCTT ATTATCAAAA TTAAGTTTAC TTGTATACGG	1620
35	AACAACCACA AGAAATTTGA TTCTGTAAAG AATCCTCTTT AGCTGTGGCC TGGCAGTATA	1680
	TAAATGGTGC TTTATTTAAC AGAATACCTG TGGAGGAAAT AAAGCACACT TGATGTAAAA	1740
40	ATAATTGTTT TATTTTTTAT GACATGACTG ATTGATTGCT ATTCTGTGCA CTTAATTAAA	1800
	CTGATTGTGA TGACTTWAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA A	1851

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(2) INFORMATION FOR SEQ ID NO: 63:

(i) SEQUENCE CHARACTERISTICS:

50

- (A) LENGTH: 3542 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 63:

55

60	TCCAATGCTG ATGAGCGTCT TCGCTGGCAG GCCAGCTCCT TGCCTGCTGA TGACCTTTGC	60
	ACAGAAAATG CCATCATGCT GAAACGATTC AATAGGTATC CGCTGATCAT TGACCCCTCT	120
60	GGACAGGCCA CAGAATTCAT TATGAATGAA TATAAGGWTG GTAAGATCAC ACGGACCAGC	180

	TTCTTGATG ACGCCTTCAG AAAGAACTTA GAGAGTGCAC TGAGATTCCG TAACCCCTTT	240
5	CTGCTCCAGG ATGTGGAAAG CTACGATCCA GTTTTGAACC CGGTGCTGAA CCGTGAAGTG	300
	CGGCGAACAG GGGGAGAGT GCTGATCACT CTCGGGGACC AGGACATAGA CCTGTCGCCA	360
	TCGTTTGTCA TCTTCCTGTC CACCCGGGAT CCAACTGTCT AGTTCCACC AGATCTCTGT	420
10	TCCCGGGTTA CTTTGTGAAA CTTACAGTT ACCCGTAGCA GTTTACAAAG CCAGTGTCTA	480
	AATGAAGTAC TTAAAGCAGA AAGACCTGAT GTGGACGAGA AACGATCTGA TCTTCTTAAA	540
15	CTTCAAGGGG AATTTACAGT CCGTTTGCCT CAGCTGGAAA AATCTCTACT ACAAGCTCTG	600
	AACGAGGTGA AAGGGCGCAT TTTGGATGAC GACACGATCA TAACCACTCT GGAGAACCTG	660
	AAGAGAGAGG CTGCAGAGGT CACCAGGAAA GTTGAGGAGA CGACATTTGT CATGCAGGAG	720
20	GTGGAGACCG TGTCCCAGCA GTACCTCCCG CTCTCCACCG CCTGCAGCAG CATCTACTTC	780
	ACCATGGAGT CCCTCAAGCA GATACACTTC TTGTACCACT ACTCCCTCCA GTTTTTCCTG	840
25	GACATTTATC ACAACGTCCT ATACGAGAAC CCGAACCTGA AGGGTGTAC CGACCACACA	900
	CAGCGCTGT CCATTATAAC AAAGGACCTC TTCCAGGTGG CGTTTAACCG AGTGGCTCGA	960
	GGCATGCTGC ATCAGGACCA CATTACCTTT GCCATGCTGC TGGCAAGAAT CAAACTGAAG	1020
30	GGCACCGTGG GGGAGCCCAC CTACGATGCA GAATTCCAGC ACTTCTTGAG AGGAAATGAG	1080
	ATTGTCTCTGA GTGCTGGCTC CACCCCCAGG ATCCAGGCC TGACTGTGGA GCAGGCGGAG	1140
35	GCGGTGGTGA GGCTGAGCTG CCTTCCCGCG TTTAAGGACT TGATTGCAA GGTTCAGGCA	1200
	GACGAGCAAT TTGGCATCTG GCTGGACAGC AGCTCCCGG AGCAGACTGT GCCCTACCTC	1260
	TGGAGTGAAG AAACACCTGC AACACCCATT GGCCAGGCCA TCCACCGCCT GCTCTGATC	1320
40	CAGGCTTTCC GGCCGATCG CCTGTTGGCC ATGGCCACA TGTTTGTTC AACAACTTT	1380
	GGGAGTCTT TCATGTCCAT CATGGAGCAG CCGCTCGACC TGACCCACAT TGTGGSCACA	1440
45	GAGGTGAAGC CCAACACTCC TGTCTTAATG TGCTCTGTGC CTGGTTATGA TGCCAGTGGA	1500
	CATGTCGAGG ACCTTGACG CGAGCAGAAC ACGCAGATCA CTTCAATTGC AATCGGCTCT	1560
	GCAGAAAGCT TTAACCAAGC AGATAAGGCA ATAAACACCG CTGTAAAGTC GGGCAGGTGG	1620
50	GTGATGCTGA AGAATGTGCA TCTGGCCCCA GGGTGGCTGA TGCAGCTGGA GAAGAAGTTG	1680
	CATTCCCTGC AGCCGCATGC CTGCTTCCGA CTCTTCCTCA CCATGGAGAT CAACCCCAAG	1740
55	GTGCCTGTGA ATCTGTCTCC TGCGGGCCGC ATCTTTGTGT TCGAGCCACC GCCAGGGKTG	1800
	AAGGCCAACA TGCTGAGGAC GTTCAGCAGC ATTCCCGTCT CACGGATATG CAAGTCTCCC	1860
	AACGAGCGTG CCCGCTTGTA CTTCTGCTG GCCTGGTTTC ATGCGATCAT CCAAGAACGC	1920
60	TTACGATACG CACCACTGGG GTGGTCAAAG AAGTATGAAT TTGGAGAGTC TGACCTGCGG	1980

	TCANYTTGCG ATACGGTGGA CACGTGGCTG GATGACACGG CCAAGGGCAG GCAGAACATC	2040
	TCACCGGATA AGATCCCGTG GTCTGCACTA AAGACCTTAA TGGCCCAGTC CATTTATGGC	2100
5	GGGCGCGTGG ACAACGAGTT TGACCAGCGT CTGCTCAACA CCTTCCTGGA GCGCCTGTTT	2160
	ACAACCAGGA GTTTCGACAG TGAGTTTAAG CTGGCATGCA AGGTGACGG ACATAAAGAC	2220
10	ATTCAAATGC CAGATGGCAT GCAGGCGAGA GGAGTTTGTG CAGTGGGTGG AGTTGCTCCC	2280
	CGACACCCAG ACGCCCTCCT GGCTGGGCCT GCCCAACAAC GCCGAGAGAG TCCTCCTTAC	2340
15	CACACAGGGT GTGGACATGA TCAGTAAAT GCTGAAGATG CAGATGTTGG AGGATGAGGA	2400
	CGACCTGGCC TACGCAGAGA CTGAGAAGAA GACGAGGACA GACTCCACGT CCGACGGGCG	2460
	CCCTGCCTGG ATGCGGACAC TGCACACCAC CGCGTCCAAC TGGCTGCACC TCATCCCCCA	2520
20	GACGCTGAGC CACCTCAAGC GCACCGTGGA GAATATCAAG GATCCTTTGT TCAGGTTCTT	2580
	TGAGAGAGAA GTGAAGATGG GCGCAAAGCT GCTTCAGGAC GTTCGCCAGG ACCTTGCGA	2640
25	TGTCGTCCAG GTGTGCGAAG GAAAGAAGAA GCAGACCAAC TACTTGCGCA CGCTGATCAA	2700
	CGAGCTAGTG AAAGGGATCT TGCCTCGGAG CTGGTCCCAC TACACGGTGC CTGCCGGCAT	2760
	GACCGTCATC CAGTGGGTGT CCGACTTCAG CGAGAGGATC AAACAGCTGC AGAACATCTC	2820
30	ACTGGCAGCT GCATCTGGTG GCGCCAAGGA GCTAAAGAAC ATCCACGTGT GCCTGGGTGG	2880
	CCTGTTCTGT CCTGAGGCGT ACATCACTGC CACCAGGCAG TATGTGGCCC AGGCCAACAG	2940
35	CTGGTCCCTG GAGGAGCTCT GCCTGGAAGT CAACGTCACC ACCTCACAGG GCGCCACCCT	3000
	TGACGCTTGC AGCTTCGGAG TCACGGGTTT GAAACTTCAA GGGGCCACGT GCAACAACAA	3060
	CAAGCTGTCA CTGTCCAATG CCATCTCAAC CGCCCTTCCC CTGACGCAGC TGCCTGGGT	3120
40	CAAGCAGACA AACACCGAGA AGAAGGCCAG TGTGGTAACC TTACCTGTCT ACCTGAACTT	3180
	CACCCGTGCA GACCTCATCT TCACCGTGGA CTTCGAAATT GCTACAAAGG AGGATCCTCG	3240
45	CAGCTTCTAC GAGCGGGGTG TGCAGTCTT GTGCACAGAG TAAACTTTTC TAGCTGCCCC	3300
	TTTCTGTAAT AGTGAAAGTT GGTATTTAAC ATTTATTCAT TTTTAAAATA TTTGGAAGGT	3360
	CTGAGCTTGT GAAAAGAAAG TGGTTGGTCT GAGGTTGGAG GAAGCTGAAT GGAATCTGAC	3420
50	GGTTGGGAGT GGTGGAATTT GGAAGGATAC CAGGAGGTAT TTGGGAAGGC CAATGGCGTG	3480
	GCTCCTTTGA GGAAATAAAA CACTAAGCAT GAAAAAAAAA AAAAAACTTA CAANCCNCAA	3540
55	GG	3542

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 883 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 64:

AGGTGATTTT AATGATAGGT GTCATATATA GGACGGATAA TCTGTTTACA TTCTGTTCTT 60
CTCGATGCAC TCACAAGCGG GTAAC TAGGT GACAAGAAAA CAAAGATCTT ATTCAAAGA 120
GGTCTTACAG CAACCCAACG TCTCATCTTC CCATAGTAAA GATGACGGCG CCTTGAGGTA 180
AGCTACAGGC AACACCACTT CCGCGTTTCT CTGCGCCCT GGTCCAAGAT GGCGGATGAA 240
GCCACGGAC GTGTGTGTGTC TGAGATCCCG GTGCTGAAGA CTAACGCCGG ACCCCGAGAT 300
CGTGAGTTGT GGGTGCAGCG ACTGAAGGAG GAATATCAGT CCCTTATCCG GTATGTGGAG 360
AACAACAAGA ATGCTGACAA CGATTGGTTC CGACTGGAGT CCAACAAGGA AGGAACTCGG 420
TGGTTTGAA AATGCTGGTA TATCCATGAC CTCCTGAAAT ATGAGTTTGA CATCGAGTTT 480
GACATTCTTA TCACATATCC TACTACTGCC CCAGAAATTG CAGTTCCTGA GCTGGATGGA 540
AAGACAGCAA AGATGTACAG GGTGGCAA ATATGCCTGA CGGATCATTT CAAACCTTTG 600
TGGGGCCAGG AATGTGCCCA AATTGGACT AGCTCATCTC ATGGCTCTGG GGCTGGGTCC 660
ATGGSTGGCA GTGGAATCC CTGATCTGAT TCAGAAGGGC GTCATCCAAC ACAAAGAGAA 720
ATGCAACCAA TGAAGAATCA AGCCACTGAG GCAGGGCAGA GGGACCTTTG ATAGGCTACG 780
ATACTAWTTT CCTGTGCATC ACACCTAACT CATCTAACTG TTCCCCGGAC ANCCTCCACT 840
CTAGTTGTTA CTAAGTANTG CAGTAGCATT NTGGGAAGA ACA 883

(2) INFORMATION FOR SEQ ID NO: 65:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1541 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 65:

GGCACGAGGT GGCTCTACC CTGGGCTCAT CTGGCTACAC AGGGACTCTA AACGCTTCCA 60
GATTCCCTGG AAACATGCCA CCCGGCATAG CCTCAACAA GAAGAGGAAA ATACCATTTT 120
TAAGGCCTGG GCTGTAGAGA CAGGAAGTA CCAGGAAGGG GTGGATGACC CTGACCCAGC 180
TAAATGGAAG GCCCAGCTGC GCTGTGCTCT CAATAAGAGC AGAGAATTCA ACCTGATGTA 240
TGATGGCACC AAGGAGGTGC CCATGAACCC AGTGAAGATA TATCAAGTGT GTGACATCCC 300

TCAGCCCCAG GGCTCGATCA TTAACCCAGG ATCCACAGGG TCTGCTCCCT GGGATGAGAA 360
 GGATAATGAT GTGGATGAAG AAGATGAGGA AGATGAGCTG GATCAGTCGC AGCACCATGT 420
 5 TCCCATCCAG GACACCTTCC CCTTCCTGAA CATCAATGGT TCTCCCATGG CGCCAGCCAG 480
 TGTGGGCAAT TGCAGTGTGG GCAACTGCAG CCCGGAGGCA GTGTGGCCCA AAAGTGAACC 540
 10 CCTGGAGATG GAAGTACCCC AGGCACCTAT ACAGCCCTTC TATAGCTCTC CAGAACTGTG 600
 GATCAGCTCT CTCCCAATGA CTGACCTGGA CATCAAGTTT CAGTACCGTG GGAAGGAGTA 660
 CGGCAGACC ATGACCGTGA GCAACCCTCA GGGCTGCCGA CTCTTCTATG GGGACCTGGG 720
 15 TCCCATGCCT GACCAGGAGG AGCTCTTTGG TCCCGTCAGN CTGGAGCAGG TCAAATTCCC 780
 AGGTCTTGAG CATATTACCA ATGAGAAGCA GAAGCTGTTC ACTAGCAAGC TGCTGGACGT 840
 20 CATGGACAGA GGAAGTATCC TGGAGGTCAG CGGTCATGCC ATTTATGCCA TCAGGCTGTG 900
 CCAGTGCAAG GTGTACTGGT CTGGGCCATG TGCCCCATCA CTTGTGTGCTC CCAACCTGAT 960
 TGAGAGACAA AAGAAGGTCA AGCTATTTTG TCTGGAACA TTCTTAGCG ATCTCATTCG 1020
 25 CCACCAGAAA GGACAGATAG AGAAGCAGCC ACCGTTTGAG ATCTACTTAT GCTTTGGGGA 1080
 AGAATGGCCA GATGGGAAAC CATTGGAAAG GAAACTCATC TTGGTTCAGG TCATTCCAGT 1140
 30 AGTGGCTCGG ATGATCTACG AGATGTTTTT TGGTGATTTC ACACGATCCT TTGATAGTGG 1200
 CAGTGTCGCG CTGCAGATCT CAACCCAGA CATCAAGGAT AACATCGTTG CTCAGCTGAA 1260
 GCAGCTGTAC CGCATCCTTC AAACCCAGGA GAGCTGGCAG CCCATGCAGC CCACCCCCAG 1320
 35 CATGCAACTG CCCCCTGCCC TGCCTCCCCA GTAATGTGA ATGCCATCTT CTTCCTTCTC 1380
 TTTTATTATA TATTGTACAT ATGGATTTTT TTATGTTTTA GATTTAAACA GCTTTTAAAT 1440
 40 CTCTGTTTTT TGTGACAGTG TTAGAAGTTT GTGATCTCC AAATATGCCT AGATTTAAAG 1500
 CTGATTTAAT TTATGGAAAA AAAAAAAAAA AAAAAAAAAA A 1541

45

(2) INFORMATION FOR SEQ ID NO: 66:

50 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 732 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 66:

AGAAAAATGAA TGTTAGAAGG TGCCTGCCGA GCGGGACAG AGTGTTTGCT CGCGCTGGAG 60
 AAGGCTCTGC TCAGCCCTGA GAGTCCCTTC CTGCCCCACC GATACTGGCA CTTTAAAAAG 120

60

	GAAGCTGACC GCACAGTGTG CAGACGAATT GGGCCCCAGA AGATGGGGAG TTCTGTCTCTG	180
	CCCTTCTGTG TCTGCGTGAC CTCACCCAGC CTAGGAGGGA GGTGCATTCA GGGTAGATTT	240
5	GCCTCTCATT CAAAGTCTG GGGCTTTGGG CGGAAAACAG CCAGCTTTGG CGCTGTGGG	300
	GAGACTCCTC CAGACCAGGA ACCCCAGAAG GAGACAGAGC CTGCCACATC CTCCCACGCC	360
10	AGGCCCTGGG CCAGGGTGAT TGGACTGAGA ATTTGGCCAC AACCAAATTG ATGCTGGCTG	420
	GAACCAGAGG CCAGAAAGCC TGGCCTGTG CCCATGTGGG AGCCCTGTCC TCAGCCCTCT	480
	TGTCCCTTG AGCTCAGTGA ATTCCACCA GGTGCCACA GCTCCTGGAC TTCAAATTCT	540
15	ATATATGAG AGAGTGGAG AGTATATCAG AGATATTTTT GGAAAGGAGT TGGTCTATGC	600
	AATGTCAATT TGAATCTTC TTGAAAGTTT AATGTTTTTA TTAGGAGATT TAAAGAAAAT	660
20	AAAGGTCTAC AATATCAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA	720
	AAAAAAAAAA AA	732

25

(2) INFORMATION FOR SEQ ID NO: 67:

(i) SEQUENCE CHARACTERISTICS:

30

- (A) LENGTH: 629 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 67:

35

	TTAAGGAATT CGGCMCGATC CCGCAAGTA ACATGACTAA AAAGAAGCGG GAGAATCTGG	60
	GCGTCGCTCT AGAGATCGAT GGGCTAGAGG AGAAGCTGTC CCAGTGTCCG AGAGACCTGG	120
40	AGGCCGTGAA CTCCAGACTC CACAGCCGGG AGCTGAGCCC AGAGGCCAGG AGGTCCCTGG	180
	AGAAGGAGAA AACAGCCTA ATGAACAAAG CCTCCAATA CGAGAAGGAA CTGAAGTTTC	240
45	TTCGGCAAGA GAACCGGAAG AACATGCTGC TCTCTGTGGC CATCTTTATC CTCCTGACGC	300
	TCGTCTATGC CTA CTGAGCCT GGC ACTTCCC CACAACCAGC ACAGGCTTCC	360
	ACTTGGCCCC TTGGTCAGGA TCAAGCAGGC ACTTCAAGCC TCAATAGGAC CAAGGTGCTG	420
50	GGGTGTTCCC CTCCCAACCT AGTGTTC AAG CATGGCTTCC TGGCGGCCCA GGCCTTGCTT	480
	CCCTGGCCTG CTGGGGGGTT CCGGTCTCC AGAAGGACAT GGTGCTGGTC CCTCCCTTAG	540
55	CCCAAGGGAG AGGCAATAAA GAACACAAAG CTGAAAAAAA AAAAAAAAAA AACTCGTAGG	600
	GGGGGCCCGT ACCCAATCGC CCTTTCGTG	629

60

(2) INFORMATION FOR SEQ ID NO: 68:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 1751 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 68:

10	CTGCTAGCCG GCCGGCGCAG GCTGCCGAGC GGGTGAGCGC GCAGGCCAGG CCAAAGCCCT	60
	GGTACCCGCG CGGTGCGGGC CTCAGTCTGC GGCCATGGGG GCGTCCGCGC GGCTGCTGCG	120
15	AGCGGTGATC ATGGGGGCCC CGGGCTCGGG CAAGGGCACC GTGTGCTCGC GCATCACTAC	180
	ACACTTCGAG CTGAAGCACC TCTCCAGCGG GGACCTGCTC CGGGACAACA TGCTGCGGGG	240
20	CACAGAAATT GCGTGTTAG CCAAGGCTTT CATTGACCAA GGGAAACTCA TCCCAGATGA	300
	TGTCATGACT CGGCTGGCCC TTCATGAGCT GAAAAATCTC ACCCAGTATA GCTGGCTGTT	360
	GGATGGTTTT CCAAGGACAC TTCCACAGGC AGAAGCCCTA GATAGAGCTT ATCAGATCGA	420
25	CACAGTGATT AACCTGAATG TGCCCTTTGA GGTCAATTAA CAACGCCTTA CTGCTCGCTG	480
	GATTCATCCC GCCAGTGGCC GAGTCTATAA CATTGAATTC AACCTCCCA AACTGTGGG	540
30	CATTGATGAC CTGACTGGGG AGCCTCTCAT TCAGCGTGAG GATGATAAAC CAGAGACGGT	600
	TATCAAGAGA CTAAAGGCTT ATGAAGACCA AACAAAGCCA GTCCTGGAAT ATTACCAGAA	660
	AAAAGGGGTG CTGGAACAT TCTCCGAAC AGAAACCAAC AAGATTGGC CCTATGTATA	720
35	TGCTTTCCTA CAAACTAAAG TTCCACAAAG AAGCCAGAAA GCTTCAGTTA CTCCATGAGG	780
	AGAAATGTGT GTAACATTA ATAGTAAGAT GGGCAACCT CCTAGTCCTT GCATTTAGAA	840
40	GCTGCTTTTC CTAAGACTTC TAGTATGTAT GAATTCTTTG AAAATTATAT TACTTTTATT	900
	TCTACTGATT TTATTTTGGA TACTAAGGAT GTGCCAAATG ATTCGGATAC TAAGATGCAT	960
	CGTTTGAAAT CATCTAGTGT GTGTATGCA GTTATCCTCA AAAACATCAG CGATGTCTGA	1020
45	ACCTTTAAAA CATCTGTTAG AGCAAAATTA AAAGAGCATT TGGTAGTAAT CTAACTTTTT	1080
	GTTCAGTTAA TAAGTGGTTG ATAAAGTTTC CATATTTTTC TGGAAAAGTT AAAAAAGTT	1140
50	ACATGTCATT TGGAGAAAAT ACGTAATCAG AAATTTGTGC ATAGATTGAT GCCAAAAAG	1200
	ACATTTCCAG CATGTGGAA CATGGTGAGA CACTATATAA AATTCCAGAA AGAAAGCAAC	1260
	TGGATTTACA GATTTATTGT GAGACACAAA TTCACTGCTG CCTTTACACT AAGAAATGTA	1320
55	TATGTTAACC ATATATGCTG TATTTATTTT GTCGTTAAGC ATACTTTCAG TTTACTCAGA	1380
	ATTTTCAATT TGCTATAAAG ATGTATCAAT TAGCATATAG AAAAATATTA CTTTAAGATG	1440
60	ACTGTGTTCC TTTGAAAATA CCTGTGTACT GAGGGTTATG ATTTGTGTCA AAAATTGACA	1500

TAAGTGCTTT TACAAGCACC AAAGTTGAAT GAATTTTCAA CAAAATGTAA TTAAAGTCTA 1560
 TGTTTTTCAGT TATGACTCAG GTTAAGAAAT GTGTTTTAGG ATCTACTTGC TGGTTTTTCT 1620
 -5 TTTTGATCCA AATGTGTGAT CTGCCCTGAT AAATAACAAG TTATNGTACC ATCTCCCCCG 1680
 CCAATAAAAA AAAAAAAAAA AAAAAAAAAAC TCGAGGGGGG GCCCGGTACC CAATTCTCCG 1740
 NAATAGGNAG T 1751

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(2) INFORMATION FOR SEQ ID NO: 69:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 508 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

20

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 69:

GGCACGAGAT TATGTATTAA AATGTTTTTG AATTGTGAAA TATTAGAATA TTGTTACTAT 60
 25 TTGACCCAAC TCAAAATCTC CATGGGAAAA TACCTGTGCA TACCCACAGT ATTGTTGAAA 120
 ATAATCAGAT GCAGTATCAC AGCTGTGTCA GACTCTAGTA CCAGTTGGGC AATCAAGGCA 180
 30 CAGCTAAAAA TTGAAAACAA AGATCTGGAC AACAAAACAG CCAAAGGTGG GGGTCAAGAA 240
 GCTCTGACGT GTACCTAGCT GTAGAATGCT ATGCACACGT GCCAGGTGTA GTGTGCATAT 300
 CCAGGAAAAA CTGCAGAGAG CCCAGTCTT CACCTCTGGT TGACCATGAG CTCTGTGTAA 360
 35 GCAGGAAGTG AAGGCTAAGG CAGATTTAAG CTCTGAAAGC ATTCCACAAC ATACACACAA 420
 ATCGTGCAAA GCATTAAGGA AATCTTGTTA CTGCTAAGTG TTGCTGACCC AGGAACAAC 480
 40 CCTACTCAGC TGGACTTAAA AATAAAAA 508

(2) INFORMATION FOR SEQ ID NO: 70:

45

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 245 base pairs

(B) TYPE: nucleic acid

50

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 70:

TACATAGAGC AAAGAGAAAT TTCCAGAATT TCTARAATTC TGGAAAGAGA ATTTTCCTGA 60
 GATTCGAGAT TTGCTGTGTG CCTCAGGTGA TGATGAGGGC TGTTTTCCCC TGTTGTCCTT 120
 TCCTCACACT CATGCTTCCT CTCCTAGAGT GTCTGGTTGG CATGATCATG TGCTACCTAG 180
 60

GCATTTCTTT CACTGATACA AGGAAACTG CAGGGTTAAA AAAAAAAAAA AAAAAAAAAA 240
NCNCG 245

5

(2) INFORMATION FOR SEQ ID NO: 71:

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(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 361 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

15

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 71:

ATGTTCTCA TGAGGATGCA CTTGTGCTTC TGCAAGTATT GCTGCAGCTT CATAGTGACT 60
20 CCCACCAGCA CCAGCAATAC AGCTAGCTAC CTGTGGCCTT GGATCTCAGC CAGCATGGCT 120
GGGAGAGGGA GCAGCTGGGC ATGTACCCTA AATGCTGTTA CCAGGGAAGG ACTCCCAGAG 180
25 TGAAGACAAG TAGGGACTTC CTGCAGAGGT GGTACATGTG CTCTCTGTAT CCATACTTTT 240
TTTTTTTTTT TTTTGAGATA GAGTTTCACC CTGTGTGCCC TGGCTGGAGT GCAATGGTGC 300
GATCTCAGCT CACTGCAACC TCTCTGCCTC CCGGGTTCAA GTGATTCTCC TGCCTCAGCC 360
30 T 361

35

(2) INFORMATION FOR SEQ ID NO: 72:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 713 base pairs
(B) TYPE: nucleic acid
40 (C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 72:

45 AGGATCACAC AATAGAGAAC ACTGTAGTAA CATTTCCGTC TGCTCACAAG ACCCAGAACA 60
TTGATCAGTT TTTGTTGTTG GTTTATTATT TTCTGTATA AAAATTGTGA AAAGTTTGTT 120
TTAGCTAGAT GATATTTTAA TAGCTGCGAG TGCTTTGGAA CTATAAAGAT GTCACTACTT 180
50 AACACACATA CCTATGTTT TGTTTTGTTT TGTTTTACAC TCAGTATAAA TCAGGAGAAG 240
TTAGCCAACC ATCTAGCATT TAGAATCCTC TTTTATTATG TCTCTAAGG ATATGGATGT 300
55 TCCCATAACA GCAACAAAAC AGCAACAAA ACATTTTCATA AATATCACTT GATAGACTGT 360
AAGCACCTGC TTAACCTTGT GTCCCAAATA TTAGTGTGT ATATATATAT ATATATATAC 420
ACACACACAC ACATATATAT TCAACAAATA AAGCAAAATA TAACATGCAT TTCACATTTT 480
60

GTCTTTCCTT GTTACGATTT TAATAGCAGA ACTGTATGAC AAGTTTAGGT GATCCTAGCA 540
 TATGTTAAAT TCAAATTAAT GTAAAACAGA TTAACAACAA CAAAGAACT GTCTATTGTA 600
 5 GTGAAGTCAT GCTTTCATT ATAATAACTT GGCTTCGGTT ATCCATCAAA TGCACACTTA 660
 TACTGTTATC TGATTGTTTA TAATAAGAA TACTGTACTT ATAAAAAAA AAA 713

10

(2) INFORMATION FOR SEQ ID NO: 73:

15 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 862 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 73:

GAAAGTCAGA GCTGTCCAAT CCTCAGCAC CTTTATGATT TGCTCCAAAT TAGAAACGTG 60
 GGGACTATGT GTTCTGGGCA ATCACAGGTC TGAAAAATGG CTCTGCAGGC TCTTGATAGT 120
 25 GAGACAGTGG TCATCTTACC AGACATGCAT CTGATTTTAA GCCTCAGGCT AATCCACAAT 180
 GCTCGGCCAT GCCTATGATT AACAAACAAA AGCAAAATCT GCTTTTATAG TTTAGGAAAC 240
 30 CTGGATAGAA CAGTATTTTT CAGCATTCCT GGATAAAGCA GTTCTGCATT TTTAAATTGG 300
 GACTGCAGAA GTGACTGTCT ATAGTTGTGA AATACAAAAA ATGGTATGTT TGATCAGAAA 360
 AGGAAGCCCG TGCTTGGCAC TTGAAAGAT ACTGAGCATC ATAACCCTAA TGAGAAAATG 420
 35 TAGGCTCTGT GAATGTTAAC TACAAATCAG GTTAGGAAAG CATATGACAC CCTTTGTCAA 480
 ACTAAGCTTC ACTAGGAGGA CCTGTGCTCA TAGAAGAATA TGCTTTAAAA GTATCAATTT 540
 40 TCCACAGTCG ATGATGGAGA AAAGTTCAAT TGCACCAGAA TGCTGATAGT CACAATACAC 600
 AGCCTGACAT ATATAACAAT ACAGTTTCTT GTAAACAGAA GTTCTTCCTC TTCCAATTCA 660
 GGAGTCAGTC AGAGCATAAA TATTGCATGT TTCATTTAG AACTGATTC ATTTTAGAAA 720
 45 GCAGATCTGG ATTATTTTGC AGGGTAGAAA TGAAGGCTAT TTCTGGCATT CTGCTCAAA 780
 AAGTCAATAT ATGTACATTA AGTATAAAAA AGGTCTCTT TCACCTCTTT TGTTCGTAG 840
 50 CATGGCTAC ATAACGCTG CC 862

55 (2) INFORMATION FOR SEQ ID NO: 74:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 4602 base pairs
 60 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 74:

- 5	GCGAGGGGGC GKGGGAGCA GCGCCGARGC CGCCGCCTCC GCCTCCGCCG CCTAGGACTA	60
	GGGGGTGGGG GACGGACAAG CCCCGATGCC GGGGGAKACG GAAGAGCCGA GACCCCGGA	120
	GCAGCAGGAC CAGGAAGGGG GAGAGGCGGC CAAGGCGGCT CCGGAGGACC CGCAACAACG	180
10	GCCCCCTGAG GCGGTGCGGG CGGCGCTGC AGGGACCACT AGCAGCCGCG TGCTGAGGGG	240
	AGGTGCGGAC CGAGGCCGGG CCGCTGCGRC CGCCGCGCMG CAGCTGTGTC CCGCCGAGA	300
15	AGGCCGAGTA TCCCCGCCGG CGAGGAGCAG CCCAGCGCC AGGCCTCCCG ACGTCCCCGG	360
	GCAGCAGCCC AGGCCGCGAA GTCCCCGTCT CCAGTTCAGG GCAAGAAGAG TCCGCGACTC	420
	CTATGCATAG AAAAAGTAAC AACTGATAAA GATCCCAAGG AAGAAAAGA GGAAGAAGAC	480
20	GATTCTGCCC TCCCTCAGGA AGTTTCCATT GCTGCATCTA GACCTAGCCG GGGCTGGCGT	540
	AGTAGTAGGA CATCTGTTTC TCGCCATCGT GATACAGAGA ACACCCGAAG CTCTCGGTCC	600
25	AAGACCGGTT CATTCGAGCT CATTTGCAAG TCAGAACCAA ATACAGACCA ACTTGATTAT	660
	GATGTGAGG AAGAGCATCA GTCTCCAGGT GGCATTAGTA GTGAAGAGGA AGAGGAGGAG	720
	GAAGAAGAGA TGTTAATCAG TGAAGAGGAG ATACCATTCA AAGATGATCC AAGAGATGAG	780
30	ACCTACAAAC CCCACTTAGA AAGGGAACC CCAAGCCAC GGAGAAAATC AGGGAAGGTA	840
	AAAGAAGAGA AGGAGAAGAA GGAATTTAAA GTGGAAGTAG AGGTGGAGGT GAAAGAAGAG	900
35	GAGAATGAAA TTAGAGAGGA TGAGGAACCT CCAAGGAAGA GAGGAAGAAG ACGAAAAGAT	960
	GACAAAAGTC CACGTTTACC CAAAAGGAGA AAAAAGCCTC CAATCCAGTA TGTCCGTTGT	1020
	GAGATGGAAG GATGTGGAAC TGTCTTGCC CATCTCGCT ATTTGCAGCA CCACATTAAA	1080
40	TACCAGCATT TGCTGAAGAA GAAATATGTA TGTCCCATC CCTCCTGTGG ACGACTCTTC	1140
	AGGCTTCAGA AGCAACTTCT GCGACATGCC AAACATCATA CAGATCAAAG GGATTATATC	1200
45	TGTGAATATT GTGCTCGGGC CTTCAAGAGT TCCCACAATC TGGCAGTGCA CCGGATGATT	1260
	CACACTGGCG AGAAGCATTA CAATGTGAGA TCTGTGGAAT TACTTGTCGA CAAAAGGCAT	1320
	CTCTTAATTG GCACATGAAG AAACATGATG CAGACTCCTT CTACCAGTTT TCTTGCAATA	1380
50	TCTGTGGCAA AAAATTTGAG AAGAAGGACA GCGTAGTGGC ACACAAGGCA AAAAGCCACC	1440
	CTGAGTGCT GATTGCAGAA GCTCTGGCTG CCAATGCAGG CGCCCTCATC ACCAGCACAG	1500
55	ATATCTTGGG CACTAACCCA GAGTCCCTGA CGCAGCCTTC AGATGGTCAG GGTCTTCCTC	1560
	TTCTTCCTGA GCCCTTGGGA AACTCAACCT CTGGAGAGTG CCTACTGTTA GAAGCTGAAG	1620
60	GGATGTCAAA GTCATACTGC AGTGGGACGG AACGGGTGAG CCTGATGGCT GATGGGAAGA	1680

	TCTTTGTGGG AAGCGGCAGC AGTGGAGGCA CTGAAGGGCT GGTATGAAC TCAGATATAC	1740
	TCCGTGCTAC CACAGAGGTT CTGATTGAAG ATTCAGACTC TGCCGGACCT TAGTGGACAG	1800
- 5	GAAGACTTGG GGCATGGGAC AGCTCAGACT TTGTATTTAA AAGTTAAAAA GGACAAAAAA	1860
	AAAATCTAAA GCATTTAAAA TCTAGTGAAA TAACTGAAGG GCCTGCTCTT TCCATTGTGG	1920
10	ATCACAGCAC ACACATACAT ACACCCTCCA CCTCCCCATC CCCTGTTCTC CCTCTGTTC	1980
	TCCCCTTATA AAATTGATGT TGTCTTTACC AGAAAGGTAG ACAAAAAAGA AGCAGCAGCA	2040
	GCTCTTAAAG TGAGGGTTAT TCTCATACTC GGTTCAGCC ATCAGCAGAC TTCCTGCTCA	2100
15	TCCGCAGATC CCCCTTTCCA ACCTGTAAC TGTATGTGCT CTGGATCAGC TTTTAACTTT	2160
	TAATCATATA TTACTGTCTT CTAAATCCCT TCTCCTCCTC TACTGCTGCC CTATGGTTCT	2220
20	GGCTCCTACC CCCTGCGGCA CACTTATCTT CAAATACCAT AGAATTCTAA TCTCTGAAAT	2280
	CATAGCTCTC CAGTGGCTTT TAAAGAAAGC TGGTCTCAG CACTAACAAA ATCACTACAA	2340
	TAGCCTAGTG CTTTTTGGGA AGCCTTTTGA GGAAGAATG TTAGGTTTCAT GGTAAGTAGT	2400
25	ATGCTCTTTG AGATTTTAC AGTGTGAAA CTTAAGAATT TTGAGAGGT GAGGAGGTT	2460
	GTTCAGAATC TAAATTACAG ATAGATGATT GTTCTTGTG AATTGTGTTT TTTTCTTTT	2520
30	TTTTGTCCC TACCATTTC TTACATTTCC CTTGGGGCCC ATCTCTGGCT CCTGCTTTT	2580
	TGTTCTTTC TTTGCTTTAT CAGTTCAITC CAGCTCCCTG TTAGTGAAGG AACTGCTGT	2640
	TAGTGAAGGA ACAAAGTCTA TGAGTCTAA AATTTTAAGT CAAAGAAAAC TGCTCTGTTT	2700
35	CCCCTTAGT AACACTTCTG AAGAGGAAAA ACTTCAATAG CCAAAGTTAA TAATCCTATA	2760
	TAATAATTGC TTTGGCTTTC ACCTAAAATT CTGGGCATCA CAATTTCTTT GGGATAGAGG	2820
40	TTGTGTGGG GAATAGATTG CTTATTGCTG TTCACTGGAG AGAAAAGGTA GTGTTTTTGT	2880
	ACAAGGTCAT ACCGCCAGAA GCCCCAAATC CTATTTTGGC TCATCTTCAG GTAAAGAGTA	2940
	ATTCTTATCC TGTGTGCTC AGAAGCTAGA ATCGAAGGT TACCCTATTC ATTGTTTATT	3000
45	GTCAGAAATG CATGATGGCT CTTGGAAAGA ATGACGTTT GCTGGAAAAA AAAAAARAA	3060
	CMGTTTGTGT TTCACAAACA TGGCTTATCA ATTTTTCAA AGAATTCTTT TTTCCAAAA	3120
50	AGAGGAGTAA CAAAATGTCA TTTCTGAAAG AGGCTTACTT TATACCAACT AGTGTACGCA	3180
	TTTGGGATGC CAGGGAACAG AGAGTGAGAC ACCTACAATC ACCAGTCTCA AATGCGCTAT	3240
	TGTTCTTTT CAGAGTGTG CAGATTTGCC ATTTCTCCAT AATATGGGGA TAGAAAATGG	3300
55	AATAAAGATA GAAGGGATGT AGAATATGCT TTCTGCCAA CATGGTTTGG AGTCGACTTT	3360
	GGTATATTGA CTAGATTTGA AAATACAAGA TTGATTAGAT GAATCTACAA AAAAGTTGTC	3420
60	CTCCTCTCAG GTCCCTTTTA CACTTTTGA CTAAGTAGCA TCTATATTC AACTTAGCT	3480

	TTTTTGTCAC ACTTATCCTT TGTCTCCGTA AATTTCATTT GCAGTGGTTA GTCATCAGAT	3540
	ATTTTAGCCA CCTACACAAA AGCAAAGTGC ATTTTAAAAA ATCTTTCTGA GATGGGAGAA	3600
5	AATGTATTCT CCTTTCCTAT ACCGCTCTCC CAACAAAAAA ACAACTAGTT AGTTCTACTA	3660
	ATTAGAAACT TGCTGTACTT TTTCTTTTCT TTTAGGGGTC AAGGACCCCTC TTTATAGCTA	3720
10	CCATTGCGCT ACAATAAATT ATTGCAGCAG TTTGCAATAC TAAAATATTT TTTATAGACT	3780
	TTATATTTTT CCTTTTGATA AAGGGATGCT GCATAGTAGA GTTGGTGTA TTAAGTATC	3840
	TCAGCCGTTT CCTGCTTTC CCTTCTGCTC CATATGCCTC ATTGTCCTTC CAGGGAGCTC	3900
15	TTTTAATCTT AAAGTTCTAC ATTTTCATGCT CTTAGTCAAA TTCTGTTACC TTTTAAATAA	3960
	CTCTTCCAC TGCAATTTT CATCTGAAT TGGTGGTTCT AAATCTGAA ACTGTAGTTG	4020
20	AGATACAGCT ATTTAATATT TCTGGGAGAT GTGCATCCCT CTTCTTTGTG GTTGCCCAAG	4080
	GTTGTTTTC GTAACGAGA CTCTTGATA TGCTTCAGAG AATTTAGGCA AACACTGGCC	4140
	ATGGCCGTGG GAGTACTGG AGTAAATAA AAATATCGAG GTATAGACTA GCATCCACAT	4200
25	AGAGCACTTG AACCTCCTTT GTACCTGTTT GGGGAAAAAG TATAATGAGT GTACTACCAA	4260
	TCTAACTAAG ATTATTATAG TCTGGTGTG TGAAATACCA TTTTCTCTC CTTTGTGTT	4320
30	TTTCCCACTT TCCAATGTAC TCAAGAAAAT TGAACAAATG TAATGGATCA ATTTAAATAA	4380
	TTTTATTTCT TAAAAGCCTT TTTTGCCTGT TGTAATGTGC AGGACCCTTC TCCTTTCATG	4440
	GGAGAGACAG GTAGTTACCT GAATATAGGT TGAAAGGTT ATGTAAAAAG AAATTATAAT	4500
35	AAAAGGGATA CTTTGTCTTT CAAATCTTTG TTTTCTCTTA TTCTAGGTAA GGCATATTAA	4560
	AAATAAATAT GTAAAGAAGA AAAATAAAAG TTGTCTTCAT GG	4602

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(2) INFORMATION FOR SEQ ID NO: 75:

- (i) SEQUENCE CHARACTERISTICS:
- 45 (A) LENGTH: 1255 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

- 50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 75:

	CGCGCCCCGG GCCGGCGGGT TTCTCTAACA AATAACAGA ACCCGCACTG CCCAGGCGAG	60
	CGTTGCCACT TTCAAAGTGG TCCCCTGGGG GAGCTCAGCC TCATCCTGAT GATGCTGCCA	120
55	AGGCGCACTT TTTATTTTTA TTTTATTTTT ATTTTTTTTT TAGCATCCTT TTGGGGCTTC	180
	ACTCTCAGAG CCAGTTTTTA AGGGACACCA GAGCCGAGC CTGCTCTGAT TCTATGGCTT	240
60	GGTTGTTACT ATAAGAGTAA TTGCCTAACT TGATTTTTCA TCTCTTTAAC CAAACTTGTG	300

5 GCCAAAAGAT ATTTGACCGT TTCCAAAATT CAGATTCTGC CTCTGCGGAT AAATATTTGC 360
 CACGAATGAG TAACTCCTGT CACCACTCTG AAGGTCCAGA CAGAAGGTTT TGACACATTC 420
 TTAGCACTGA ACTCCTCTGT GATCTAGGAT GATCTGTTC CCCTCTGGAT GAACATCCTC 480
 TGATGATCAA GGCTCCCAGC AGGCTACTTT GAAGGGAACA ATCAGATGCA AAAGCTCTTG 540
 10 GGTGTTTATT TAAAATACTA GTGTCACTTT CTGAGTACCC GCCGCTTCAC AGGCTGAGTC 600
 CAGGCCTGTG TGCTTTGTAG AGCCAGCTGC TTGCTCACAG CCACATTTCC ATTTGCATCA 660
 TTA CTGCCTT CACCTGCATA GTCACCTCTT TGATGCTGGG GAACCAAAAT GGTGATGATA 720
 15 TATAGACTTT ATGTATAGCC ACAGTTCATC CCCAACCCTA GTCTTCGAAA TGTTAATATT 780
 TGATAAATCT AGAAAAATGCA TTCATACAAT TACAGAAATC AAATATTGCA AAAGGATGTG 840
 20 TGCTCTTCTC CCGAGCTCC CTGTTCCTCC TTCATTGAAA ACCACCACGG TGCCATCTCT 900
 TGTGTATGCA GGGCTATGCA CCGCAGGCA CGTGTGTATG CACTCCCCGC TTGTGTTTAC 960
 ACAAGCTGTG GGGTGTACG CATGCCTGCT TTTTTCACCT AATAATACAG CTTGGAGAGA 1020
 25 TTTTGTATC ACATTATAAA TCCCACTCGC TCTTTTGTAT GGCCACATAA TAACTACTGC 1080
 ATAATATGGA TACGCCTTAT TTGATTTAAC TAGTTCCTA ATGATGGACT TTTAAGTTGT 1140
 30 TTCTTTT TTTCTTTT GCTACTGCAA ACGATGCTAT AATAAATGTC CTTATCAAAA 1200
 AAAAAAAAAA AAAAAAAAAA AAAAAANCCC NGGGGGGGG CCCCAGGAAC NCAAT 1255

35

(2) INFORMATION FOR SEQ ID NO: 76:

40 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 475 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 76:

GGCACGAGAG AAATGTTTGA TTCTCTTTCC TATTTTAAGG GATCTTCTCT CTTGTGATG 60
 50 TTGAAACTT ACCTTAGTGA AGATGTGTTT CAACATGCTG TTGTCTTTA CCTGCATAAT 120
 CACAGCTATG CATCTATTCA AAGTGATGAT CTGTGGGATA GTTTTAATGA GGTCAAAAC 180
 CAAACACTAG ATGTAAAGAG AATGATGAAA ACCTGGACCC TGCAGAAAGG ATTTCTTTTA 240
 55 GTGACTGTTT AAAAGAAAGG AAAGGAAGTT TTTATACAAC AAGAGAGATT CTTTTTAAAT 300
 ATGAAGCCTG AAATTCAGCC TTCAGATACA AGGTACATGC CCTCTTTCTT TTCAATGCCAT 360
 60 CTCTTTTGCA CTCTCAGGTG GAAATATTTT GAAGTGT TTTT ATAATCATAA GTTCTGTGTA 420

AACCTAACAA GATTATCCCT TCCTAAGAAT ACTTAACCTT CCTACCAAAT TAAAA

475

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(2) INFORMATION FOR SEQ ID NO: 77:

(i) SEQUENCE CHARACTERISTICS:

10

(A) LENGTH: 465 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 77:

15

TTCTCTCTGC TCTTCGACTG CACCGCACTC GCGCGTGACC CTGACTCCCC CTAGTCAGCT 60

CAGCGGTGCT GCCATGGCGT GCGGGCGGCG CGAACCRGCG TCGGGGCTCG CGGCGTGTG 120

20

GCTCTGGCGT TGCTCGCCCT GSCCTGTGTC GTGCCCCGGG CCGGGGGCCG GGCTCTCGAG 180

TGGTTCTCGG CGGTGGTAAA CATCGAGTAC GTGGACCCGC AGACCAACCT GACGGTGTGG 240

25

AGCGTCTCGG AGAGTGGCCG CTTCGGCGAC AGCTCGCCCA AGGAGGGCGC GCATGGCCTG 300

GTGGGCGTCC CGTGGGCGCC CGGCGGAGAM CTCGARGGCT KCGCGCCCGA CACGCGCTTC 360

TTCTGTCCCG AGCCCGGCGG CCGAGGGGCC GCGCCCTGGG TCGCCCTGGT GGTCTGTGGG 420

30

GCTGCACCTT TCAAGGACAA AGTGCTGGTG GCGGCGCNGA ANGAA 465

35

(2) INFORMATION FOR SEQ ID NO: 78:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1907 base pairs

(B) TYPE: nucleic acid

40

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 78:

45

ACATGCAGCC CAACTACAGA TTCTTATGGA ATTCTCAAG GTTGCAAGAA GAAATAAGAG 60

AGAGCAACTG GAACAGATCC AGAAGGAGCT AAGTGTTTTG GAAGAGGATA TTAAGAGAGT 120

50

GGAAGAAATG AGTGGCTTAT ACTCTCCTGT CAGTGAGGAT AGCACAGTGC CTCAATTGTA 180

AGCTCCTTCT CCATCACACA GTAGTATTAT TGATTCCACA GAATACAGCC AACCTCCAGG 240

TTTCAGTGGC AGTTCTCAGA CAAAGAAACA GCCTTGATAT AATAGCACGT TAGCATCAAG 300

55

ACGAAAACGA CTTACTGCTC ATTTTGAAGA CTTGGAGCAG TGTTACTTTT CTACAAGGAT 360

GTCTCGTATC TCAGATGACA GTCGAAGTGC AAGCCAGTTG GATGAATTTT AGGAATGCTT 420

60

GTCCAAGTTT ACTCGATATA ATTCAGTACG ACCTTTAGCC ACATTGTCAT ATGCTAGTGA 480

TCTCTATAAT GGTTCAGTA TAGTCTCTAG TATGAATTT GACCGGGATT GTGACTATTT 540
 TCGGATTGCT GGAGTTACAA AGAAGATTAA AGTCTATGAA TATGACACTG TCATCCAGGA 600
 5 TGCAGTGGAT ATTCATTACC CTGAGAATGA AATGACCTGC AATTCGAAAA TCAGCTGTAT 660
 CAGTTGGAGT AGTTACCATA AGAACCTGTT AGCTAGCAGT GATTATGAAG GCACTGTTAT 720
 10 TTTATGGGAT GGATTCACAG GACAGAGGTC AAAGGTCTAT CAGGAGCATG AGAAGAGGTG 780
 TTGGAGTGTT GACTTTAATT TGATGGATCC TAAACTCTTG GCTTCAGGTT CTGATGATGC 840
 AAAAGTGAAG CTGTGGTCTA CCAATCTAGA CAACTCAGTG GCAAGCATTG AGGCAAAGGC 900
 15 TAATGTGTGC TGTGTTAAAT TCAGCCCCCTC TTCCAGATAC CATTTGGCTT TCGGCTGTGC 960
 AGATCACTGT GTCCACTACT ATGATCTTCG TAACACTAAA CAGCCAATCA TGGTATTCAA 1020
 AGGACACCGT AAAGCAGTCT CTTATGCAAA GTTGTGAGT GGTGAGGAAA TTGTCTCTGC 1080
 20 CTCACAGAC AGTCAGCTAA AACTGTGGAA TGTAGGGAAA CCATACTGCC TACGTTCCCTT 1140
 CAAGGGTCAT ATCAATGAAA AAAACTTTGT AGGCCTGGCT TCCAATGGAG ATTATATAGC 1200
 25 TTGTGGAAGT GAAAATAACT CTCTCTACCT GTACTATAAA GGACTTTCTA AGACTTTGCT 1260
 AACTTTTAAG TTTGATACAG TCAAAAGTGT TCTCGACAAA GACCGAAAAG AAGATGATAC 1320
 AAATGAATTT GTTAGTGCTG TGTGCTGGAG GGCCTACCA GATGGGGAGT CCAATGTGCT 1380
 30 GATGCTGCT AACAGTCAGG GTACAATTAA GTGCTAGAA TTGGTATGAA GGGTTAACTC 1440
 AAGTCAAATT GTACTTGATC CTGCTGAAAT ACATCTGCAG CTGACAATGA GAGAAGAAAC 1500
 35 AGAAAATGTC ATGTGATGTC TCTCCCCAAA GTCATCATGG GTTTTGGATT TGTTTTGAAT 1560
 ATTTTTTTCT TTTTTTCTTT TCCCTCCTTT ATGACCTTTG GGACATGGG AATACCCAGC 1620
 CAACTCTCCA CCATCAATGT AACTCCATGG ACATTGCTGC TCTTGGTGGT GTTATCTAAT 1680
 40 TTTTGTGATA GGGAAACAAA TTCTTTTGAA TAAAAATAAA TAACAAAACA ATAAAAGTTT 1740
 ATTGAGCCAC AGTTGAGCTT GGAAAGTTT TGTCAAATGC NGCAAGAGAT AACTCTTTT 1800
 45 ANGAAGTAGC ATATGTGAAC TATAATGTAA CAGTGAATAA TTTGTAAAGT TCGTATTTCC 1860
 CAACCTCTTT GGAATTACA CATATCAATA TAAACAAAAT ATAAAGT 1907

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(2) INFORMATION FOR SEQ ID NO: 79:

- 55 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1168 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear
- 60 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 79:

5 GCTGGGGTGT CCCCKCSGCC ACCATCGTCA TCGCTTACTT GATGAAGCAC ACTCGGATGA 60
 CCCATGACTG ATGCTTATAA ATTTGTCAAA GGCAAACGAC CAATTATCTC CCCAAACCTT 120
 AACTTCATGG GGCAGTTGCT AGAGTTGAG GAAGACCTAA ACAACGGTGT GACACCGAGA 180
 ATCCTTACAC CAAAGCTGAT GGGCGTGGAG ACGGTTGTGT GACAATGGTC TGGATGGAAA 240
 10 GGATTGCTGC TCTCCATTAG GAGACAATGA GGAAGGAGGA TGGATTCTGG TTTT'TTTTCT 300
 TTCTTTT'TT TTTTGTAGTT GGGAGTAAGT TTGTGAATGG AAACAACTT GTTTAAACAC 360
 TTTAT'TTTTA ACAAGTGTA GAAGACTATA ACTTTTGATG CCATTGAGAT TCACCTCCCA 420
 15 CAAACTGACA AATTAAGGAG GTTAAAGAAG TAATTTT'TT AAGCCAACAA TAAAAATATA 480
 ATACAACTTG TTTCTCCCC TTTTCTT'TT AAGCTATTTG TAGAGTTTAT GACTAAATAG 540
 20 TCTGTGCAGG TTCATAGACC GAAGATACTA CACACTTTAA ACCAATTAAA AAGAACCAAA 600
 AGTAAATAGA AAAGACATTG AATCACCAAG GCCTGGGATC AACCTGGGCT GTCCACACAG 660
 AAAACAAAAA CCCAACCAAA CCAAGCCCTG TTGTGCTCAC TGGTGCAAAG AGAAGATCAG 720
 25 GGCAGCTTAA GTGGTCTAAG RATCCTTCAG GCATTCTTTA AGGAGAAAAA GGATACCTTT 780
 GATTTTGIGT GTTTCATGCT CTGGATTTT'T TTTT'TTTTTC CTTCCTCGGG TTTAAGAGAT 840
 30 TTTT'TTGAA ATAGTGAGGA ACTGACCA'TT ATATGCC'TC ACTGGCTTCT TGTGCAATAA 900
 TATGATGTTT TAAGTGTGCA AACAAGTTAG AGCTGGCAGC TGAATGATAG ACAAATAGTG 960
 CAAATTTGCC AGCTTGAGGA TAGAAAGGAA TTCAACAATA TATCAAATAC TTTCTTCCC 1020
 35 ACCTTTT'TCC TTTT'TTTT'TT TTTT'TTCTGA TTTGATTCTG GTTACAGTGC CATAAACCTT 1080
 GTTACATATG TATATCAGAA TGTAAGAAAA AAAAATTTAT TTAAAAATAT TTTTCGCAAA 1140
 40 AAAAAAANNA AAAA'ACTCGA GGGGGGCC 1168

45 (2) INFORMATION FOR SEQ ID NO: 80:

(i) SEQUENCE CHARACTERISTICS:

- 50 (A) LENGTH: 1285 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 80:

55 AGAAATCAC ATCCTAACAA AGAAGTCTGT CTAAGACAGT ACATCTCCTG TTGA'ACTTGC 60
 ATCTTTCAC AGGACTTTCT GTTTT'TAGGG ATGAGACTAT TCTCTGCTTC ATCAAGGAAA 120
 60 GAGAAATGTT CAGGGTTGTA GGGATGGCAC ACTTATTAGT TCTGCCTGTC TGAAAGGTTT 180

CTGCAGGACA GTTGGTCAG AGCTGCAATT CTTAGTCCAT GGTCTAATGC TTGAGTATCT 240
 CTTCTTTCCC TTTCCTGTCT CAGGAATCAG CTGAGAATTC ATTCGATTGT CATGCCTCTA 300
 5 GCCCCTTACT GTGATTTGTT GGTGCACTT TCATTTGCTT TAGTTCTAGA ATCACCTGTT 360
 GACTCCTCAG ACTTCACCTA ACTTTGGAAA CTCTCTTTTG GAGGCTTCTC ATTTCCCCCT 420
 10 AATTCTGTGC TGCCTGAGCC CTAGAATTTT CCCACCAACG AATTATTCCA GGTAGATCCT 480
 AAGTTGCTGG ATCTAGTTGA TATTTAAACA ATATCTAGTT GATATTTCTC ATTCAGTTGG 540
 ATCCAGAAAC CAGTATCTCT NAAAAACAAC CTCTCATACC TTGTGGACCT AATTTTGTGT 600
 15 GCGTGTGTGT GTGCGCGCAT ATGTATATAG ACAGGCACAT CTTTTTACT TTGTAAAAG 660
 CTTATGCCTC TTGGTATCT ATATCTGTGA AAGTTTAAAT GATCTGCCAT AATGTCTTGG 720
 GGACCTTTGT CTCTGTGTA AATGGTACTA GAGAAACAC CTATATTATG AGTCAATCTA 780
 20 GTTGGTTTTA TTCGACATGA AGGAAATTTT CAGATAACAA CACTAACAAA CTCTCCCTTG 840
 ACTAGGGGGA CAAAGAAAAG CAAACTGAC CATAAAAAAC AATTACCTGG TGAGAAGTTG 900
 25 CATAACAGA ATTAGGTAGT ATATTGAAGA CAGCATCATT AAACAGTTAT GTTGTCTCC 960
 TTGCAAAAA CATGTAAGT CTTCCCGTTG AGTAATGCCA AGTTGTTTTT TTTATTATAA 1020
 AACTTGCCCT TCATTACATG TTTCAAAGTG GTGTGGTGGG CCAAAATATT GAAATGATGG 1080
 30 AACTGACTGA TAAAGCTGTA CAAATAAGCA GTGTGCCTAA CAAGCAACAC AGTAATGTTG 1140
 ACATGCTTAA TTCACAAATG CTAATTTTAT TATAAATTGT TTTGCTAAAA TACACTTTGA 1200
 35 AACTATTTTT CTGTATTCCA AGAGCTGAGA TCTTAGATTT TATGTAGTAT TAAGTGAAAA 1260
 AATACGAAAA TAATAACAT TGAAG 1285

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(2) INFORMATION FOR SEQ ID NO: 81:

45 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1290 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 81:

TCTCCAGCCC CAATTTCTAC GCGCACCAGA AGACGGAGGT CCTCTTTCCT TGCCTAACGC 60
 AGCCATGGCT CGTGGTCCCA AGAAGCATCT GAAGCGGGTG GCAGCTCCAA AGCATTTGAT 120
 55 GCTGGATAAA TTGACCGGTG TGTGTGCTCC TCGTCCATCC ACCGGTCCCC ACAAGTTGAG 180
 AGAGTGTCTC CCCCTCATCA TTTTCTGAG GAACAGACTT AAGTATGCCC TGACAGGAGA 240
 60 TGAAGTAAAG AAGATTGCA TGCAGCGGTT CATTAATAATC GATGGCAAGG TCCGAACTGA 300

	TATAACCTAC CCTGCTGGAT TCATGGATGT CATCAGCATT GACAAGACGG GAGAGAATTT	360
	CCGTCTGATC TATGACACCA AGGGTCGCTT TGCTGTACAT CGTATTACAC CTGAGGAGGC	420
5	CAAGTACAAG TTGTGCAAAG TGAGAAAGAT CTTTGTGGGC ACAAAGGAA TCCCTCATCT	480
	GGTGACTCAT GATGCCCGCA CCATCCGCTA CCCCAGTCCC CTCATCAAGG TGAATGATAC	540
10	CATTGAGATT GATTTAGAGA CTGGCAAGAT TACTGATTTT ATCAAGTTCC ATTACCCAG	600
	CCAGGTGGTC TCGTCACCTC AGAGGCTCCG CAGACTCCTG CCCAGGCCAG GACTGAGGCA	660
	AGCCTCAAGG CACTTCTAGG ACCTGCCTCT TCTCACCAAG ATGAACTCAC TGGTTTCTTG	720
15	GCAGCTACTG CTTTTCCTCT GTGCCACCCA CTTTGGGGAG CCATTAGAAA AGGTGGCCTC	780
	TGTGGGGAAT TCTAGACCCA CAGGCCAGCA GCTAGAATCC CTGGGCCTCC TGGCCCCSGG	840
20	GGAGCAGAGC CTGCCGTGCA CCGAGAGGAA GCCAGCTGCT ACTGCCAGGC TGAGCCGTCG	900
	GGGGACCTCG CTGTCCCCGC CCCCAGAGAG CTCGGGAGC CCCCAGCAGC CGGGCCTGTC	960
	CGCCCCCAC AGCCGCCAGA TCCCCGACC CCAGGCGCG GTGCTGGTGC AGCGGAGAA	1020
25	GGACCTGCCG AACTACAAC TGAACCTCTT CGGCCTGCGC TTCGGCAAGC GGGAGGCGGC	1080
	ACCAGGAAC CACGGCAGAA GCGCTGGCG GGGCTGAGGG CGCAGGTGCG GGGCAGTGAA	1140
30	CTTCAGACCC CAAAGGAGTC AGAGCATGCG GGGCGGGGG GGGGGCGGG GACGTAGGGC	1200
	TAAGGGAGGG GCGCTGGAG CTTCCAACCC GAGGCAATAA AAGAAATGTT GCGTAACTCA	1260
35	AAAAAAAAA AAAAAAANC TCGGGGGGGG	1290

40 (2) INFORMATION FOR SEQ ID NO: 82:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 684 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 82:

50	TTTATTGTAT TCTGTAAC TAAGAACTTCT ATTTWATTTCT TTTTGGACT TGCTAAGTTG	60
	TCTTTWATGG TTTTWAGTTC CATGCTGAAG TTTTCACTAT TGACTTATCC CCTTGAACAT	120
	GAGTTGTTTT ATAGACTCTR ATGATTCAAA AATCTTACAT CTTTGGTAG TCTCTTTCAT	180
55	TTGTYCACTG TTTCTGTGTA TTCTWACTCA TGGTATTTTA ATTCTTCGTT WTTTTTTTTT	240
	TGTTWAGAWA CATTCTTTGA AAAATAATTT GGAGGAATAT TTGATTCTTA TGAACAAGGC	300
60	ATTACTCACC AGAGAAGATT TTTTGTGTYT ACCARGTGCC TARGAATGCT AACAGTCTGG	360

5 GAMCACATAG AMCACCAGGT GATGAGACAA TCCTGGGART CCTGTTTTAC TTTGGSCCAT 420
 CTTTCTCTCC AACCTGTGG GAATATCAT YCATATCCTA RCTGCAGGCT ARAAGGTGGT 480
 TTATCAGAGC CCAACTTCGA GGGCTCTGGG CTTTAGCTAC TGTACCCCA TCATAACTGA 540
 GCTTCATGGA TTGATTCTCT TTTATCTTT CAGATTTTCT TTTAAAAATC TTTGTTTTTT 600
 10 TTTTCTTCC GAAAGATTCC CCAACATTA CCATTCCCCA CCTTCCGTTG AATTTTTTTG 660
 GCTCTCATTT TGAATTTTTC AAGA 684

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(2) INFORMATION FOR SEQ ID NO: 83:

(i) SEQUENCE CHARACTERISTICS:

20 (A) LENGTH: 2024 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 83:

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CTGCAGGAAT TCGGCACAGC TCGCTGGAG GCTTCATCTT TGCCGCCGCT GCCGTCGCCT 60
 TCCTGGGATT GGAGTCTCGA GCTTCTCTCG TTCGTTCTGYC GGCGGGTTCG CGCCCTTCTC 120
 30 GCGCCTCGGG GCTGCGAGGC TGGGAAGGG GTTGGAGGGG GCTGTTGATC GCCGCGTTTA 180
 AGTTGCGCTC GGGGCGGCCA TGTGGCCGG CGAGGTCGAG CGCCTAGTGT CGGAGCTGAG 240
 CGGCGGGACC GGAGGGGATG AGGAGGAAGA GTGGCTCTAT GCGGATGAAA ATGAAGTTGA 300
 35 AAGGCCAGAA GAAGAAAATG CCAGTGCTAA TCCTCCATCT GGAATTGAAG ATGAAACTGC 360
 TGAAAATGGT GTACCAAAAC CGAAAGTGAC TGAGACCGAA GATGATAGTG ATAGTGACAG 420
 40 CGATGATGAT GAAGATGATG TTCATGTAC TATAGGAGAC ATTTAAACGG GAGCACCACA 480
 GTATGGGAGT TATGGTACAG CACCTGTAAA TCTTAACATC AAGACAGGGG GAAGAGTTTA 540
 TGGAACTACA GGGACAAAAG TCAAAGGAGT AGACCTTGAT GCACCTGGAA GCATTAAATGG 600
 45 AGTTCCACTC TTAGAGGTAG ATTTGGATTC TTTTGAAGAT AAACCATGGC GTAAACCTGG 660
 TGCTGATCTT TCTGATTATT TTAATTATGG GTTTAATGAA GATACCTGGA AAGCTTACTG 720
 50 TGAAAAACAA AAGAGGATAC GAATGGGACT TGAAGTTATA CCAGTAACCT CTAATAACAA 780
 TAAATTTACG GTACAGCAGG GAAGAACTGG AACTCAGAG AAAGAACTG CCCTTCCATC 840
 55 TACAAAAGCT GAGTTTACTT CTCTCTCTC TTTGTTCAAG ACTGGGCTTC CACCGAGCAG 900
 GAGATTACCT GGGGCAATG ATGTTATCGG TCAGACTATA ACTATCAGCC GAGTAGAAGG 960
 CAGGCGACGG GCAAATGAGA ACAGCAACAT ACAGGTCCTT TCTGAAAGAT CTGCTACTGA 1020
 60 AGTAGACAAC AATTTTAGCA AACCACCTCC GTTTTCCCT CCAGGAGCTC CTCCCACTCA 1080

CCTTCCACCT CCTCCATTTC TTCCACCTCC TCCGACTGTC AGCACTGCTC CACCTCTGAT 1140
 TCCACCACCG GGTTTTCTCTC CTCCACCAGG CGCTCCACCT CCATCTCTTA TACCAACAAT 1200
 - 5 AGAAAGTGGG CATTCCTCTG GTTATGATAG TCGTCTGCA CGTGCATTTC CATATGGCAA 1260
 TGTTCCTTTT CCCCATCTTC CTGGTCTGTC TCCTTCGTGG CCTAGTCTTG TGGACACCAG 1320
 10 CAAGCAGTGG GACTATTATG CCAGAAGAGA GAAAGACCGA GATAGAGAGA GAGACAGAGA 1380
 CAGAGAGCGA GACCGTGATC GGGACAGAGA AAGAGAACGC ACCAGAGAGA GAGAGAGGGA 1440
 GCGTGATCAC AGTCTTACAC CAAGTCTTTT CAACAGCGAT GAAGAACGAT ACAGATACAG 1500
 15 GGAATATGCA GAAAGAGGTT ATGAGCGTCA CAGAGCAAGT CGAGAAAAG AAGAACGACA 1560
 TAGAGAAAGA CGACACAGGG AGAAAGAGGA AACCAGACAT AAGTCTTCTC GAAGTAATAG 1620
 20 TAGACGTCGC CATGAAAGTG AAGAAGGAGA TAGTCACAGG AGACACAAAC ACAAAAAATC 1680
 TAAAAGAAGC AAAGAAGGAA AAGAAGCGGG CAGTGAGCCT GCCCTGAAC AGGAGAGCAC 1740
 CGAAGCTACA CCTGCAGAAT AGGCATGGTT TTGGCCTTTT GTGTATATTA GTACCAGAAG 1800
 25 TAGATACTAT AAATCTTGTT ATTTTCTGG ATAATGTTTA AGAAATTTAC CTTAAATCTT 1860
 GTTCTGTTTG TTAGTATGAA AAGTTAACTT TTTTCCAAA ATAAAAGAGT GAATTTTTC 1920
 30 TGTTAAGTTA AAAATCTTTG TCTTGTAATA TTTCAAAAAT AAAAAGACAG CAATGACTTT 1980
 ATATCCAAA AAAAAAAAAA AAAAAAAAAA AAAAAAGGGC GGCC 2024

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(2) INFORMATION FOR SEQ ID NO: 84:

40 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 931 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 84:

CGCGCCMATA GCCGGACGGG GATCTGAGCT GGCAGGATGA ATGTGGGGGT GGCACACAGC 60
 GAAGTAAACC CCAACACCCG AGTGATGAAT AGCCGAGGCA TCTGGCTGGC CTACATCATC 120
 50 TTGGTAGGAT TGCTGCATAT GGTTC TACTC AGCATCCCCT TCTTCAGCAT TCCTGTTGTC 180
 TGGACCCTGA CCAACGTCAT CCATAACCTG GCTACGTATG TCTTCCTTCA TACGGTGAAA 240
 55 GGGACACCCCT TTGAGACTCC TGACCAAGGA AAGGCTCGGC TACTGACACA CTGGGAGCAA 300
 ATGGAATATG GGCTCCAGTT TACCTCTTCC CGCAAGTTCC TCAGCATCTC TCCTATTTGTG 360
 CTCTATCTCC TGGCCAGCTT CTATACCAAG TATGATGCTG CGCACTTCCT CATCAACACA 420
 60

GCCTCATTGC TAAGTGACT GCTGCCGAAG TTGCCCCAGT TCCATGGGGT TCGTGCTTTT 480
 GGCATCAACA AATACTGAGG GATGGGTTTT GGGACAGCTC CATGGGCATG GGGAAGGCAC 540
 5 TGAAACAGAG GACTATAAAA CATCCTTCTC TTATTTCTCCA TACTGTCTTC TACACCTTTA 600
 AAGCCTGAGA ACTATACAAC CTTTCCCAGA CTCCAAGAA GAGAAGAGAT TGGCAAATGG 660
 10 GGCTCCTGGG CCCAGTCTG CTAGTGGCAA GTTCTTTTGA ATCAGGAAGG CAGGTGAGGT 720
 AAGGGCCAAA TCACTCTCCT CCATAGCAGG AAGCCATTG GGCAGCTCCT TTGGTGATTA 780
 CATCTTTCCA TATCTTTTAC ACTTACCACC TTCCAGCTCT GTTTTGCTGT GTATTTTCTT 840
 15 TACAATAATT TTTTTCAGCT ATAGCTGCAG TTTAATCAGG ATGGGTAGAG AGCTGTCTTC 900
 ATAAGGCTGG GGGTGGGAAG ATGAATACT G 931

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(2) INFORMATION FOR SEQ ID NO: 85:

(i) SEQUENCE CHARACTERISTICS:
 25 (A) LENGTH: 825 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 85:

CGGGGCCGGC GGGGTCTTCA GGTACCGG CTGGTTACAG CAGCTCTACC CCTCAGCAG 60
 CAAACATGGC AGCGCAGAAG GACCAGCAGA AAGATGCCGA GGCGGAAGGG CTGAGCGGCA 120
 35 CGACCTTGCT GCCGAAGCTG ATTCCCTCCG GTGCAGGCCG GGAGTGCGTG GAGCGGCGCC 180
 GCGCGACCAT CCGGCCCTGG AGCACCTTCG TGGACCAGCA GCGCTTCTCA CGGCCCCGCA 240
 40 ACCTGGGAGA GCTGTGCCAG CGCCTCGTAC GCAACGTGGA GTACTACCAG AGCAACTATG 300
 TGTTCTGTGT CCTGGGCCTC ATCCTGTACT GTGTGGTGAC GTCCCTATG TTGCTGGTGG 360
 CTCTGGCTGT CTMTTTCGGC GCCTGTTACA TTCTCTATCT GCGCACCTTG GAGTCCAAGC 420
 45 TTGTGCTCTT TGGCCGAGAG GTGAGCCCAG CGCATCAGTA TGCTCTGGCT GGAGGCATCT 480
 CCTTCCCCTT CTCTGGCTG GCTGGTGCGG GCTCGGCCGT CTCTGGGTG CTGGGAGCCA 540
 50 CCCTGGTGGT CATCGGCTCC CACGCTGCCT TCCACCAGAT TGAGGCTGTG GACGGGGAGG 600
 AGCTGCAGAT GGAACCCGTG TGAGGTGTCT TCTGGGACCT GCCGGCCTCC CGGGCCAGCT 660
 GCCCCACCCC TGCCCATGCC TGTCCTGCAC GGCTCTGCTG CTCGGGCCCA CAGCGCCGTC 720
 55 CCATCACAAG CCCGGGGAGG GATCCCGCCT TTGAAAATAA AGCTGTTATG GGTGTCATTC 780
 AGGAAAAAAA AAAAAAAGG GGGGCCCTC TAGGGGTCAA AGTTA 825

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(2) INFORMATION FOR SEQ ID NO: 86:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1238 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 86:

CATGTAAAAG GATGAAATGT GACTTCTGGT GTTTTTTTAT TTCTATGGAG GGACTTTCTG	60
15 GGGACGGTTT CTGGCTCTCA GGCTCTGAGA AGCTGCAGTT TATGAGTGGC TCTGTGTGTG	120
CTGCCACCTA CTGGAGAAGC CATAAGCTGC AGCTTTAGGA AAAGGGAACC CGGGGCAGAG	180
20 TGTGGGAAG TGGGATGGCA GCATGGCAGG GCTTTGAAA ATGAGAGGTG AGAGTKTKTC	240
CAGGAAGGGT GTAAGGAGAG GATGGATCCT GATACATGGA TTCAGGATCA TTAGGGTCCT	300
GTCTGGGACA CTGGCCTTCC TGCTTACCTG CTCTTTCTCTT CCTCCTTGGT CGGAGGAGGG	360
25 GCTGGCTCAC TGCTCTGGCT TCATTTTCCA GAGCTGCCTG CTGCAGTCAC ACTTAGGTCA	420
TCTTCTCTCA CTTTTCTCCT TTTGCCGATT AGTGGACGTG ACAGAGATGT GAATGGGGCA	480
30 GGGATGTCTT TTGATGGCAT CAAGACTTTA GCTTCTGGTG CGCTGTGTCC CAGCTCTGAT	540
TTCAAGTTGCA GCCGTGATGG AMAGTTNGCA TGAAGCTGA GACTCTCACT GACAGTGAAA	600
CCCTCAAATG AACACAATCC CTGCTTTCTT GCCAAGGATC CTTGTAGGGT NCCCCAGCT	660
35 TCCCCACTTT TTTTCTGTGT CCTGACAAAG AAACACAGAG TAACTTGATT GCCCTGTGAC	720
CTGGCCAGTT GCATTTCCCC TGCAGGCTTG AGCCCAAGCC AGAGCCTTGA AAAGGTATTC	780
AGGTTGTGTC CAAAACACT GAAAAAACT GCCCTGGCCC TGAACCAAAT ACCTTGAACC	840
40 CTCGTAAACT CCATACCCTG ACCCCCTTGT TTTGGATATA CCCAGGTAGA ACAACTCTCT	900
CTCACTGTCT GTGTGAGGA TACGCTGTAG CCCACTCATT AAGTACATTC TCCTAATAAA	960
45 TGCTTTGGAC TGATCACCCCT GCCAGTCTTT TGTCTTGGGC AATCTATACT TTTNCTCAGA	1020
GGTTCCTCAAG GCCTACTGAA GGGACTTAAC ATACTCTTAA TGGCTTTCTT CTCTCTTGTT	1080
50 TTACCTTATG CCCTCACTTC CTGAGTTAAC CTCCCAAATA CAGGATTCAC CTGTACCCAA	1140
GCCCTTAGCT TCAAGAATAC AGGATCACCT GTACCCAAGC CCTTAGCTCA AGCTCTGCTT	1200
TGAAGAACC CAAACTAAGA CAGTGCTCCT GGTGCCCT	1238

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(2) INFORMATION FOR SEQ ID NO: 87:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1460 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 87:

	ATTGCCTTCT GGTCCCTGGT GACACTGGGG TCATCCTTCA TCCCCGAGA GCATTTCCTGG	60
10	CTGCTCCTCC TGACCCGGGG CCTGGTGGGG GTCGGGGAGG CCAGTTATTC CACCATCGCG	120
	CCCACCTCTCA TTGCCGACCT CTTTGTGGCC GACCAGCGCG ACCGGATGCT CAGCATCTTC	180
15	TACTTTGCCA TTCCGGTGGG CAGTGGTCTG GGCTACATTG CAGGCTCCAA AGTGAAGGAT	240
	ATGGCTGGAG ACTGGCACTG GGCTCTGAGG GTGACACCGG GTCTAGGAGT GGTGGCCGTT	300
	CTGCTGCTGT TCCTGGTAGT GCGGGAGCCG CCAAGGGGAG CCGTGGAGCG CCACTCAGAT	360
20	TTGCCACCCC TGAACCCAC CTCTGGTGG GCAGATCTGA GGGCTCTGGC AAGAAATCCT	420
	AGTTTCGTCC TGTCTTCCCT GGGCTTCACT GCTGTGGCCT TTGTCACGGG CTCCCTGGCT	480
25	CTGTGGGCTC CGGCATTCTT GCTGCGTTCC CGCGTGGTCC TTGGGGAGAC CCCACCCTGC	540
	CTTCCCGGAG ACTCCTGCTC TTCCTCTGAC AGTCTCATCT TTGGACTCAT CACCTGCCTG	600
	ACCGGAGTCC TGGGTGTGGG CCTGGGTGTG GAGATCAGCC GCCGGCTCCG CCACTCCAAC	660
30	CCCCGGGCTG ATCCCTTGGT CTGTGCCACT GGCTCCTGG GCTCTGCACC CTTCTCTTTC	720
	CTGTCCCTTG CCTGCGCCCG TGGTAGCATC GTGGCCACTT ATATTTTCAT CTTCAATTGGA	780
35	GAGACCCTCC TGTCCATGAA CTGGGCCATC GTGGCCGACA TTCTGCTGTA CGTGGTGATC	840
	CCTACCCGAC GCTCCACCGC CGAGGCCTTC CAGATCGTGC TGTCCACCT GCTGGGTGAT	900
	GCTGGGAGCC CCTACCTCAT TGGCCTGATC TCTGACCGCC TGCGCCGAA CTGGCCCCC	960
40	TCCTTCTTGT CCGAGTTCCG GGCTCTGCAG TTCTCGCTCA TGCTCTGCCG GTTTGTGGG	1020
	GCACTGGGCG GCGCACTTCC TGGGCACCGC CATCTTCATT GAGGCCGACC GCCGGGGGC	1080
45	ACAGCTGCAC GTGCAGGGCC TGCTGCACGA AGCAGGGTCC ACAGACGACC GGATTGTGGT	1140
	GCCCCAGCGG GGCCGCTCCA CCCGCGTGCC CGTGGCCAGT GTGCTCATCT GGAGAGGCTG	1200
	CCGCTCACCT ACCTGCACAT CTGCCACAGC TGGCCCTGGG CCCACCCAC GAAGGGCCTG	1260
50	GGCCTAAACC CCTTGGCCTG GCCCAGCTTC CAGAGGGACC CTGGGCCGTG TGCCAGCTCC	1320
	CAGACACTAC ATGGGTAGCT CAGGGGAGGA GGTGGGGTTC CAGGAGGGG ATCCCTCTCC	1380
55	AACAGGGGCA GCCCAAGGG CTCGGTGCTA TTTGTAACGG GATTAAATTT TGTAGCCAGA	1440
	AAAAAAAAA AAAAAAAAAA	1460

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(2) INFORMATION FOR SEQ ID NO: 88:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1395 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 88:

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CAGGTGCAAA GTGGGAAGTG TGAGTCCTCA GTCTTGGGCT ATTGCGGCAC GTGCCTGCCG 60
GACATGGGAC GCTGGAGGGT CAGCAGCGTG GAGTCCTGGC CTTTTCGCTC CACGGGTGGG 120
AAATTGGCCA TTGCCACGGC GGGAACTGGG ACTCAGGCTG CCCCCCGCC GTTTCATC 180
CGTCCACCGG AYTCTGGGGC GCTCGCACTG GCGCTGATGT AGTTTCCTGA CCTCTGACCC 240
GTATTGTCTC CAGATTAAAG GTACGACATT TGGAGGCCCC AGCGAGAAAC GTCACCGGGA 300
GAAACGTCAC CGGGCGAGAG CGGKCCCGCT GTGTGCTCCC CCGGAAGGAC AGCCAGCTTG 360
TAGGGGGGAG TGCCACCTGA AAAAAAATT TCCAGGTCCC CAAAGGTGA CCGTCTTCCG 420
GAGACAGCGG ATCGACTACC ATGTGGGTGC CCACAAAAAT TYCACCTYTG AGTCCTCAAC 480
TGCTGACCCC GGGGTCAGTT CCAGAGAGAA GGAATCCCTC CTGCTTGGA GAGACCTCAC 540
ACCGTCATCA CGATGCCAAC GGCTCTGAAG GTGGATGGCA TTCTTGGCTG GATTTCATCA 600
TCCCGCATCA AAAAGGCCAA CRGAGCCCAA CTAGAAACAT GGGTCCCAG GGCTGGGTCA 660
GGCCCCTTAA AACTGCACCT AAGTTGGGTG AAGCCATTAG ATTAATTCTT TTTCTTAATT 720
TTGTAAACA ATGCATAGCT TCTGTCAACT TATGTATCTT AAGACTCAAT ATAACCCCT 780
TGTTATAACT GAGGGAATCA ATGATTTGAT TCCCCAAAA CACAAGTGGG GAATGTAGTG 840
TCCAACCTGG TTTTACTAA CCTGTMTT AGACTYTCCC TTTCTTTAA TCACTCAGCC 900
TTGTTTCCAC CTGAATTGAC TCTCCCTTAG CTAAGAGCGC CAGATGGACT CCATCTTGGC 960
TCTTTCNACT GGCAGCCGCT TCCTYCAAGG ACTTAACTTG TGCAAGCTGA CTCCAGCAC 1020
ATCCAAGAAT GCAATTAACT GATAAGATAC TGTGGCAAGC TATATCCGCA GTTCCCAGGA 1080
ATTCGTCCAA TTGATTACAC CCMAAGCCC CGCGTCTATC ACCTTGTAAT AATCTTAAAG 1140
CCCCTGACC TGGAACATT AACGTTCTG TAACCATTTA TCCTTTTAA TTTTTCCT 1200
ACTTTATTTT TGTAATAATT TTTTAACTAG ACCCCCCCTC TCCTTTCTAA ACCAAAGTAT 1260
AAAAGCAAAT CTAGCCCTT CTTAGGCCG AGAGAATTTG GAGCGTTAGC CGTCTCTTGG 1320
CCACCAGCTA AATAACGGA TTCTTCATGT GTAAAAAAA AAAAAAAA CTCCGAGGGG 1380
GGGCCCGGTA CCCAA 1395

(2) INFORMATION FOR SEQ ID NO: 89:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 1186 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

10 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 89:

GGCAGGAGCC GGCAAGCCGA GCTAGGGTGA AAAGTGGGGG CGCACCAGGA TGTNNGACAG 60
 AAAAGCAGAA GATGAGACTC TGTTCATTCA CTTTTCCTAG GCCCATCCTG TGGTCATCTT 120
 15 TCCCCCTCCC ATCATACCTC CTCCTTCCTG GAGCCTCTGC CGGCTTGGCT GTAATGGTGG 180
 CACTTACCTG GATATTTTCAG TGGGAGGATG AAAGGCGAGA CTCACCCTAC GCGGTGGGAC 240
 20 AGATGGGGAG AGGAAAAAGG CAGAGATGGC CAGGAGAGGG GTGCAGGACA AACCAGAGAG 300
 GTTGGGTTCAG GGGAAAAGGG TGGGGAGAAA GAGGGGTGCA GGCCCTGCAG GCCGGTTAGC 360
 CAGCAGCTGC GGCTTCCCCG GGCCCTTGGC ATCCAACCTC GCAGACAGGG TACCAGCCTC 420
 25 CTGGTGTGTA TCATAGGATT TGTTCACATA GTGTTATGCA TGATCTTCGT AAGGTTAAGA 480
 AGCCGTGGTG GTGCACCATG ACATCCAACC CGTATATATA AAGATAAATA TATATATATA 540
 30 TGTATGTAAA TTATGGCAGC AGAAATTATA GCACTGAGGG CCTGCTGCC CTGCTGGACC 600
 AAGCAAACT AAGCCTTTTG GTTGGGTAT TATGTTTCGT TTTGTTATTT GTTGTPTTTT 660
 GTGGCTTGTC TTATGTCGTG ATAGCACAAG TGCCAGTCGG ATGCTCTGT ATTACAGAAT 720
 35 AGTGTTTTTA ATTCATCAAT GTTCTAGTTA ATGCTACCT CAGCACCTCC TCTTAGCCTA 780
 ATTTTAGGAG GTTGCCCAAT TTTGTTTCTT CAATTTTACT GGTACTTTT TTGTACAAAT 840
 40 CAATCTCTTT CTCTCTTTCT CTCCTCCCA CCTCTACCC TTGCCCTCTC CATCTCCCTC 900
 TCCCGCCCTC CCTCTCTCC TCTGGCTCCC CGTCTCATTT CTGTCCACTC CATCTCTCT 960
 CCTCTCTCC TGCTCTCTG TGGCCCTCC CCAGCCCACT TCCCCGAGTT GTGCTTGCCG 1020
 45 CTCCTTATCT GTTCTAGTTC CGAAGCAGTT TCACTCGAAG TTGTGCAGTC CTGGTTGCAG 1080
 CTTCCGCAT CTGCCTTCGT TTCGTGTAGA TTGACGCGTT TCTTTGTAAT TTCAGTGTTT 1140
 50 CTGACAAGAT TTAATAAAAA AAAAGGAAA AAAAAAAAAA AAAAAA 1186

55 (2) INFORMATION FOR SEQ ID NO: 90:

(i) SEQUENCE CHARACTERISTICS:

- 60 (A) LENGTH: 1821 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 90:

- 5	AAAACATGCT TTCAGGGCGT CCCCTATGTA TTCGGGGGGC CCACGGACAC TCAGGCTGGA	60
	KATCCGTCCT CACTGCGCTC AAGATGGCCT CAGCAGACAC CAGTTACCCA GCTGAAAGTC	120
	ACAATCCCTC CCAGAAGTCT CCCAACACTA GTGCTGACCA GAGGTGGGGC TCTCAGGCTA	180
10	GGAGTTTCAC ACACAATGAC AGGCTGCTGG GGGACATTGC AGGACCCCTT TTCCTYTCCT	240
	CTCCATGCTA GAAGCCAGCC CTAGGMAGCT GCAGTTACTC CCTGTGACTC AGCAGCAGGC	300
15	TGATTCAACA CAGCTGCCCA CACAAAGCCA GTGGTAATAC ATCTGTTTAC CTTTCCCTAT	360
	CACCCAGACA CAAGCCCTT TCCCAGGTCA AACCACAGGC CGATGCATCT CCAGTTTGAC	420
	AGTCAAATCA CTACTTCCAT TGCTACTTTA GATCAGCCAA AGTGGTGACT GCTGCAGTGT	480
20	GTGGCTATCC CTACAAGGCC CACCAAGGG ATGCCCAAAG CCCAACCTTC TCCAGGGCTG	540
	CAGCAGNAGC AACCCACCA GCCTAAGTCC AGCAGAGGAC CTCCCACCCA ATGTCTTGTT	600
25	CTAATTAGAA GGGGAAGTTA GCCACAGAAA ATCAACTTAT CTATAATTAC AAAATTCTCT	660
	TGACTCACCT TAAAGTTCCT ATTGACATCT ACTGCTTTTA AACCTATTG AAAACTCTGA	720
	TACTAAAACA AATGACACTC TAAGAAAGTT TGGGAGCCCC ATGCTGAGAA CCATTCTGT	780
30	GCAGTGAGGA TGTTTCCAGA AGCTACTTAC CTACATGTGA ATGTGCCATT TTCTTTCTT	840
	TTGTAGAGAA AATCCCTTT ACTTTTGGGA ACAGTAATGG CAGCTTCTAG TACAGCCATT	900
35	ACAGTTTCAT ATGAGAAAAA TTAAGAATAA CTATAAAAT GTTAAATAT CCAATAATGG	960
	ATAATGATGG CCAGAAGATT TAACATACAA AGTAATTCTC AATGTAAAGC TATTCAGCTC	1020
	TTCCAGGTTG AATGCCCTGT AACCCACCT GACCTTCCAC ATCATCTTCA AAAAGCAGTT	1080
40	TCTCTGTTCC CCATGATTCT CCTATAAGGT AACTCTTTAG TCCTCCATT AGCACATTTT	1140
	AAATCCTCCA AAGAATAAGT ATCATGTGAT TATTTTAGCT TTACAAAAA AAAGTTGAAT	1200
45	GGCGTTTAT TTTTCATGGC TATAAGCAGG TACCTTAGTA GGCAGATAT AGGAAAAACA	1260
	AATTAGAGCA AAACAAATCC TCTACAAATC CAAGGCAGGA AAAGTGGTGG CAGAGTGAAT	1320
	CATTCTCCTG TCCCTCCCAT CAGGTCAAAT CAGGAGGCTG CAGTGAATGC CTGTTCTTTG	1380
50	AATGTGTAGC AGTTGTTCCT GTAACCTTT AAAACTTGGC TATAGGCTGT TTAGCACAGT	1440
	ACAGATTAAA GATACAGTTA CGTAAACAGC AAAGTAATTT TATAGTGCTT CATCCATTTA	1500
55	TCATGCTTG GTTTGCTAAT TTTTTCACAT ACCTTTTCT ATCACAGTCT GTTGCTTTTG	1560
	TACACATTTT TCATATTGGG GTTCGACAGG TAAACACAAA CTGCTATTTT AGTAGAAAAA	1620
60	GTTATTGTTA TGGAAATATTA AACCCAATAA ATTGTATAAA GGGTAAAAA AAAAAAAAAA	1680

AAAAAAAAA AAAAAAAAAA AAAAAAATTC CTGCGGGCCG CANGCTTTTT CCCTTTGGGT 1740
GAGGGGTAT TTTNGGCTTG GGCAC TGGGC CCTTCGTTTT TACAACGTCG TGANGGGGGG 1800
5 AACCCGGGGG GGGTTCCCC C 1821

10 (2) INFORMATION FOR SEQ ID NO: 91:

(i) SEQUENCE CHARACTERISTICS:

- 15 (A) LENGTH: 862 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 91:

20 TGCCCTTTTT CCCACCGATT CGGGGNTGG TGAAGGTGGG AGATGTGAAC TCCAATTAAG 60
GGACTGGAGA GAGGTGAAGA ATTTTCAGG TGGGAGATTT GGATTGAAT GTGGACTTGT 120
AAATGACTTG ACCTTGCCAT CTGTGTTCAA GGTCACGGT TGCTGTGGG TTCCTGGGAG 180
25 AGCTTACTCA CCCCGGAGTC TTTCTTTCT CTGTCTCAA GAAGAGCCCT GTTGGTGCTT 240
TACCACCGCT TGGAGTCTCC CGAGGACACA AACAGGCAGA GAGGGACGTG TAGGGAGAGT 300
30 TCTTCCTGT TTTCTGTGCT TTCCTTTTTA CAGGACTCCC GGAAGGCCAC TCATGGCCAT 360
GCCAGGAGCT TTCTCAGAAA CAGTCATAAA CGATCTCTTG AGTCTCTTC TTGTCCTCCC 420
AGCTGAGCTT TCTTATTCCA CCCTTCTGG TGTCTATAGG AATGCATGAG AAGACCCTGG 480
35 GACGTTTTTC TGCTCTCTC TGGCCCTCCA TGGAGCCATG GGCTCGGCC TCGGCGGCTC 540
CTCACCTCA CAATTTATTT CCTCCTCCCG TGCCAGCCCT TCTTTTGTGT CTGAAACCGG 600
40 TTTTAAATG TGA CTCTCCC AGAGAAGAAG CCGCTGGCTG TATGAACTT GACGGCGCTT 660
TTGTAAGGTG CCACCCCAA ACTTTAAGGT AGCTAAACCA ATTTTAAAA GATTCAATGG 720
CTTGTTATC CTCCAGATGT AGCTATTGAT GTACACTTCG CAACGGAGTG TCTGAAATTG 780
45 TGGTGGTCCT GATTTATAGG ATTTATAAT TAAATGTCT GCTGAATAA AAAAAAAAAA 840
AAAAACTCGA GGGGGGCCCG GT 862

50

(2) INFORMATION FOR SEQ ID NO: 92:

55 (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 696 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
60 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 92:

	CTGAGGCGAG TGAAGTGGAC TCTGAGGGCT ACCGCTACCG CCACTGCTGC GGCAGGGGCG	60
- 5	TGGAGGGCAG AGGGCCGCGG AGGCCGCACT TGCAAACATG GCTCAGAGCA GAGACGGCGG	120
	AAACCCGTTC GCCGAGCCCA GCGAGCTTGA CAACCCCTTT CAGGACCCAG CTGTGATCCA	180
	GCACCGACCC AGCGGGCAGT ATGCCACGCT TGACGTCTAC AACCCCTTTG AGACCCGGGA	240
10	GCCACCACCA GCCTATGAGC CTCCAGCCCC TGCCCCATTG CCTCCACCCT CAGCTCCCTC	300
	CTTGCAGCCC TCGAGAAAGC TCAGCCCCAC AGAACCTAAG AACTATGGCT CATAAGCAC	360
15	TCAGGCCTCA GCTGCAGCAG CCACAGCTGA GCTGCTGAAG AAACAGGAGG AGCTCAACCG	420
	GAAGGCAGAG GAGTTGGACC GAAGGAGCGA GAGCTGCAGC ATGCTGCCCT GGGRGGCACA	480
	GCTACTCGAC AGAACAATTG GCCCCCTCTA CCTTCTTTTT GTCCAGTTCA GCCCTGCTTT	540
20	TTCCAGGACA TCTCCATGGA GATCCCCCAA GAATTTGAGA AGACTGTATC CACCATGTAC	600
	TACCTCTGGA TGTGCAGCAC GSTGGNTCTT CTCTGAAAT TCMTGSGCTG CCTGGCCAGT	660
25	TCTGTGTGGA AACCAACAAT GCGGAGGCTT TGGGTT	696

(2) INFORMATION FOR SEQ ID NO: 93:

(i) SEQUENCE CHARACTERISTICS:

- | | |
|----|-----------------------------|
| | (A) LENGTH: 1886 base pairs |
| | (B) TYPE: nucleic acid |
| 35 | (C) STRANDEDNESS: double |
| | (D) TOPOLOGY: linear |

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 93:

40	CAGGCCACTG ACGCTTCTTT GCGAGGGATG CAGGAGGTCC TACAGAGAAA GCGCTTCTTT	60
	GCATKTCAGA GGGCCACAG CTGTCAACC ACAGATCACC AAGCAGCTTT CTACCTGGCT	120
	CTGCAGCTTG CCATCTCCAG ACAGATCCCA GAGGCTCTGG GGTATGTCCG CCAAGCTCTT	180
45	CAGCTTCAAG GTGACGATGC CAACTCCCTG CACCTCCTTG CCCTCCTGCT GTCAGCACAG	240
	AAGCATTACC ATGACGCTCT GAACATCATC GACATGGCCC TGAGTGAATA CCCAGAAAAT	300
50	TTCTACTAC TGTPTTCCAA AGTGAAGTTG CAGTCACTCT GCGAGGCCG GGACGARGCA	360
	CTGCTGACTT GTAAGCACAT GCTGCAGATA TGGAAATCCT GCTACAACCT CACCAACCCC	420
	AGTGATTCTG GACGTGGGAG CAGCCTCTTA GATAGAACCA TTGCTGACAG ACGACAGCTT	480
55	AATACAATTA CTTTGCCAGA CTTGAGCGAT CCCGAGACAG GCTCCGTCCA TGCCACATCG	540
	GTAGCAGCCT CAAGAGTGA GCAGGCACTG TCGGAAGTGG CTTCGTCTCT GCAGAGCATG	600
60	CCCCAAGCA GGGCCCGCTG CACCCCTGGA TGACGCTGGC ACAGATCTGG CTCCATGCAG	660

CTGAAGTCTA TATCGGCATC GGAAGCCTG CAGAAGCCAC AGCCTGTACC CAAGAAGCTG 720
 CCAACCTCTT CCCAATGTCC CACAATGTCC TCTACATGCG CGGCCAGATT GCTGAGCTCC 780
 5 GGGGAAGCAT GGACGAGGCG CGGCGGTGGT ATGAAGAGGC CTTAGCCANT CAGCCCCACC 840
 CACGTGAAGA GCATGCAGCG ACTTGGCCCT GATCCTTCAC CAGYTAGGCC GTACAGTYT 900
 10 GCGGAGAAG ATCCTCGGG ACGGGTGCA GGTGAACG ACAGCCCACG AGGTCTGGAA 960
 CCGGCTGGGC GAGGTCTCC AAGCTCAGG CAACGATGCG GCGGCTACGG AGTGCTTCCT 1020
 GACAGCCTTG GAGCTGGAGG CCAGCAGCCC CGCGTGCCC TTCACCATCA TCCCCCGGT 1080
 15 GCTCTGAGCA GCGCCTGCC AGCCTCACCT GCGGCTCAGC CTNCAGAGGC CCTGCCGGGC 1140
 ACCAGGGCTT GTGCCATCGC CCCAAGGGGA TGAATCTGCC GCACTGAGGC CAGGGACGAG 1200
 20 TGTTCAGTG GCCACAGTGA ACCAACCAAA CCAACCCCGA ATCATCGCTC TCGCCATGTG 1260
 CGTTCTCTT GTTTTTTTTG CCAGCCCAAT GGTAGTTTCT GAACCTATTG ACATTGTTCA 1320
 AAATGGATCA TGTGCCATAT TTTGTTAGTT GACATCTGAG TTTTCAGTAA AATGATTATG 1380
 25 GAATTAATCA GCAAATGTAG AAGAATATAT TCAAAGTTAA AATTCAGTGG CAGCACAGAT 1440
 TATTTTATC AGAGCTGTAA AGAAAACAAC TGTCCTTTTC TCCCCACCAC CCCTCCTGCC 1500
 30 CCACTTTGGC CCAGAAACCA AATGTGAAC TCTGTCTCC CACCTCAGCA CTAGTCCATG 1560
 CCAGGACACC AGCTGACAAT TTCTTGGTTT TACTGTCAAT AATTGTACCA TGTGATCAAT 1620
 TACTGTCTC ACTTAGAACA AAGCCTGAGT CCGAGAATAT TTATATTTTA CCAATATATG 1680
 35 CCTGTTACAA GAGAAGGAAA TATGAGTTAT TTAAGTTTAA CTTTTTTATG TGAATTCAGA 1740
 GTTTATTTAT CGAGGGAAAT ATGTACAAAG AAGCTTCAA TGGAATATTT ACCGACATTC 1800
 40 CTTATACATG ACAGACACTT GGCTACATGG GAAGATGATG TTAATAATAA AATGATTTTT 1860
 AAATGGAAAA AAAAAAAAAA AAAAAN 1886

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(2) INFORMATION FOR SEQ ID NO: 94:

50 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1774 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 94:

CTCAGCTACC GTATACAGTA GGACATAACC CCATTTTACA TGCACTACAC TGAGACTTGC 60
 CTCTCTCCC CCCACATTGA AGATGTTCTT TTTTCATAAC TATATACTAT TCCATTGCAT 120
 60

	GAATATTCTG TAATTTATTT AATCCCCTAT GGATTGATAA TTAGGTCAT TATAGATAGA	180
	AGTGTAAATTA ACATTCCCTGT ACATGTATTT TGCTACTTGT GTGGGTATTT CTGTAGGATG	240
-5	AATAACTAGA AATTTATTTG ATCAGGTTTC ACATTTGCAG TTTTGAAAAC TACTACCAAA	300
	AAGATTTTAC CAATTTACAA CTCCATCATT AGTAAGAATG CCTGTTTGCC TATAGTCTGC	360
10	CAACCCTGAA TCCTTAAAAA TTTTGCCAA TCTGGTAGGC AAAATTTCTT TCTTTTCTTT	420
	GAATATTAAT GAGGAGGAAC ATCTTTTCAT GTTTCCTGGC CATTTCATT TCCTATTATG	480
	AATTGCTTTT GCCCATTTTC CTTTTTPTAA TTATGAAAGT CTAATGACTA CCTTCTCATT	540
15	GTATAAAAAA CACAGTTCTT TGAATAGAGA GACCCTTTTC TCCAATGCTA CCAATCACAT	600
	TCCACTTACC ACAGTTTAAC ATACATCCTC TAGTCACCTT TCCGTACGAA TATACATACA	660
20	CATAAAAACA CTTTTTACAT AAATAGGATC TCATATCTTG TAGCTTTTTA AAATTTTGGT	720
	CTCAAAAAA GATAACAGGT CTTTAAATTT CTTTAATGGT TGAATATGAT TAAATACTAT	780
	GAAAATGCCA TTATTTATTC CCTTAAITTT TTTCTCTCG CTATTACATT GCCAAAGTAA	840
25	ACATCCTATT CAGATGTCTT TGTGCATGTG TGTGAATATT TCTTTAGTCT GGAGTCCAGT	900
	AAGGTGGATT TTTGGATCAA AGGGTTTGT CTCTGTCCAC CTTCAGTCTT CCCAAAGGCC	960
30	TTCATAACTG TATTTTCACC AAGTGTATGG AGAATGTICA TTTCCCATTA TAACCATACC	1020
	TACACTTGAT AGTTTTTATC TGTGGGCGA AAAAGAACCT TTTCTTATTT TGCATTTCCC	1080
	TGATTATAAA AAAAAATGGT GAGATGGGG TTATTTTCAT GTTTATTTGGC CATTTATAGT	1140
35	TTACTGTGGA TTGTTTGTAT CCCTTACCTG CTTTCTATTG GGTTATGTGT GGATATATTG	1200
	TTTTTATTTG TTCAGCATCT CTTTCCCAT CTTCTGGTAA CACAACCTTT ATTTATTTGT	1260
40	GGGGAACCTA TTCCCTGTGG CTTAGGTGAG CATGTGACCA GGCCTGGCCT CCTGAGTCCC	1320
	ACAGCTTCCT AGCCACAGTG ATAAAAGAAT GGGTATATAA CTTAAGCCAG GCTAAGGAAA	1380
	GCCCTTAACA GAACTTCTGC TGAAC TACT GGAAAGAAGG CTTTATGGAG ATCCCAGGAA	1440
45	CCAAGGACCA TGTAAGCCTG AATTTGTGCC ATGTGGAGAG AGTCTGTCTG AGGAGAACT	1500
	CGGATGCTAG CAGAAATGGA AAGAGAACTA AGTTCTGATG TCATTTTCTT GGAGGCCCTA	1560
50	GATCCAGCTG TGCCTAAAGC CTGCCCTACT CCGGACTTTA AAGTTTGTG AGCCAATAAA	1620
	GTCCCTTTCT TGTTTAAGAT AATTGAATTG AGTTTCTGTT CTGATTAAATA TAGGTTATTT	1680
	GTATTTTCTT ATTGATTTGT AGAAAACCTT TGTAATTTTA AATTCTAGAC TTTATGCACT	1740
55	ATATAAGTTA ATAAAATTAG CATGGCCCTC CATG	1774

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2503 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 95:

10	GGCACGAGCG AAGGCAAGGG GGCACCAGCT CAGGACTGCA TCTGCCTGCC ATTTCCCTTC	60
	CACTCCTCCT TTCTGGAGTC TGACATTAGA AAGCCAGCGA GAAGGAAGAT TCAAACAACC	120
	AACCTTGATT TCCTGCTTCT CCTTTTCATG AGTGTTCCTG TGGTCTCTGC ACCTCCTTTC	180
15	TGTCCCCCGG CAGAGGGCAG TAGAGATGGC CGGCCCAAGG CCTCRGTGGC GCGACCAGCT	240
	GCTGTTCATG AGCATCATAG TCCTCGTGAT TGTGGTCATC TGCCTGATGT TATACGCTCT	300
20	TCTCTGGGAG GCTGGCAACC TCACTGACCT GCCCAACCTG AGAATCGGCT TCTATAACTT	360
	CTGCCTGTGG AATGAGGACA CCAGCACCCCT ACAGTGTAC CAGTTCCCTG AGCTGGAAGC	420
	CCTGGGGGTG CCTCGGGTTG GCCTGGGCTT GGCCAGGCTT GCGGTGTACG GGTCCCTGGT	480
25	CCTCACCCCTC TTTGCCCCCC AGCCTCTCCT CCTAGCCCAG TGCAACAKTG ATGAGAGAGC	540
	GTGGCGSCTG GCAGTGGGCT TCCTGGCTGT KTCCTCTGTG CTGCTGGCAG GCGGCCTGGG	600
30	CCTCTTCCTC TCCTATGTGT GGAATGGGTC ARGCTCTCCC TCCCGGGGCC TGGGTTTCTA	660
	GCTCTGGGCA GCGCCAGSC CTTACTCATC CTCTTGCTTA TAGCCATGGC TGTGTTCCCT	720
	CTGAGGGCTG AGAGGGCTGA GAGCAAGCTT GAGAGCTGCT AAAGGCTTAC GTGATTGCAA	780
35	GGGTCAGTT CCAACCATGG TCAGAGGTGG CACATCTGCT CAGCCATCTC ATTTTACAGC	840
	TAACGCTGAT CTCCAGCTCC AGCGATGGAA CCCACTACAG AGGAGGTGGG GCCCCTGTGT	900
40	CAAAGAGGCC GAGGGGCAGC AAGGGCAGMC AGGGCACCTG TGA CTCTCTTA GTACAAGATT	960
	GTCTGTCTCT CAGGACTTCC AAGGCTCCCA AAGACTCCCT AAACCATGCA GCTCATTTGTC	1020
	ACACCAATTC CTGCTTTAAT TAATGGATCT GAGCAAATCT TCCTCTAGCT TCAGGAGGGT	1080
45	GGGGAGGGAG TGATTGCTGT CATGGGGCCA GACTTCCAGG CTGATTTGCC AAATGCCAAA	1140
	ATGAAACCTA GCAAAGAACT TACGGCAACA AACGAGGACA TTAAAAGAGC GAGCACCTCA	1200
50	GTGTCTCTGG GGACATGGTT AAGGAGCTTC CACTCAGCCC ACCATAGTGA GTGGGCCGCC	1260
	ATAAGCCATC ACTGGAATC CAACCCAGAG GGTCCAGGAG TGATCTCTGA GTGACTCAAC	1320
	AAAGACAGGA CACATGGGGT ACAAAGACAA GGCTTGACTG CTTCAAAGCT TCCCTGGACC	1380
55	TGAAGCCAGA CAGGGCAGAG GCGTCCGCTG ACAAATCACT CCCATGATGA GACCCTGGAG	1440
	GACTCCAAAT CCTCGCTGTG AACAGGACTG GACGGTTGCG CACAAACAAA CGCTGCCACC	1500
60	CTCCACTTCC CAACCCAGAA CTTGGAAAGA CATTAGCACA ACTTACGCAT TGGGGAATTG	1560

TGTGTATTTT CTAGCACTTG TGTATTGGAA AACCTGTATG GCAGTGATTT ATTCATATAT 1620
 TCCTGTCCAA AGCCCACTG AAAACAGAGG CAGAGACATG TACTCTGGTG TGATCTCTTG 1680
 -5 TCCTCAGTGT CTCTTCTGGG CTCTGTCCC TCTTGCTTTA TAGCTAGCTG CCCGGGGACC 1740
 AAGGTACAGG TGAAAGCAAG GTAGCAGCTT GCGGGAGGAG GCCTGTCTGG CTTACCACTC 1800
 10 TATACACTGT GGCCTCAACC TCCCAGACAG GGCAGAGAAC TGTGGGCAGC TCGTTTGCTT 1860
 TCTAGGCTGG CTGGAGAGGT GGGAGCTCAT TGATAGACTC ATGATGGAAA CTATTTTGA 1920
 AACAGGCTTC CTCTTCAGG AGAGATCATG CGGACTAAAC TGTAGCAATT CCACTGCACC 1980
 15 TGGCAGTGAT CCTTTTCTTT GCAAAGTACT GTCTCTTTGG TTCCAGTAAG TTGGACCACC 2040
 ACATGACATY ATTTTCCCTG GAACCTGGTC ACTGACTAAC ACAGACAATT GGGACTCCAG 2100
 20 AGCCTCAAGA GCCAGGAGAG GGCACAGTAC ATACAGAGGG AGTCAAATGG GATCTCATTT 2160
 TGAGTCTGC CTTCCGCACA CTCAGAACGG CANCCCCAAG GCCCGGAGTG TCCAGGGCTT 2220
 CTGGCCTGAG GTGAATCTGC CAGGCCCAAG AAGGCACAAA GGTAGGAGCA CAGAGAGCCC 2280
 25 CATTCCCACA GCGCGKCGGC CCAGCAGCAC CAGTGAAGC TCAGCTGTCC TCCAGCTGCT 2340
 CTCGGCAGAC AGTTCAGTGC ACAGTTTATG CCCTAGCTGA AAAAGATCTC CCGGACGTAT 2400
 30 TTCAGCACAT CCTCTTCTC CTCTCTCTCA GGGCTCCTGC TACAGGCAGA GCTGGAACCC 2460
 CCCGGCTCT GGAAGGGCT GAGGCCTGGA GYCAGTGCCT GTC 2503

35

(2) INFORMATION FOR SEQ ID NO: 96:

(i) SEQUENCE CHARACTERISTICS:
 40 (A) LENGTH: 2801 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 96:

CTGGAAGCC GAGGGTAGCC GAGCGGGCG GCGCTCTGG AGCGCGGGT GCTCGGGCTG 60
 CCGTCCGCTC CGCCAGAAGC ACCGAGCAGC CGAGCCGGG CCCGCCGCC TCCTCTCCA 120
 50 TGAGGCCCGA GTGAGGCGCG GCGCTATAG CCGACCCGCG GCGCTTCCC CCCGCTCT 180
 ATCGCGAGCG CACGACMAGC GGGCCCTGGA GGAGGAGCG GAGGAGGAG AGCATGTCCG 240
 55 ACGGTTTCGA TCGGGCCCA GGTGCTGGT GGGCCGGAR CCGGGGCTG GGCCGCGGAG 300
 GGGCGGGCC TRAGGCGGC GGTTTYCCGA AMGGARCGR GCCTGCTGAG CGGRCGCGC 360
 ACCAGCCGCC GCAACCCAAA GCGCGGGCT TYCTGCARCC AMCGCCGCTG CGCCARCCA 420
 60

	GGACGACCCC GCCGCCAGGG GCCCAGTGCG AGGTCCCCGC CAGCCCCCAG CGGCCCTCCC	480
	GGCCCCGGGC GCTCCCAGAG CAAACGAGGC CCCTGAGAGC TCCACCTAGT TCAAGGATA	540
-5	AAATCCCACA GCAGAACTCG GAGTCAGCAA TGGCTAAGCC CCAGGTGGTT GTAGCTCCTG	600
	TATTAATGTC TAAGCTGTCT GTGAATGCCC CTGAATTTTA CCCTTCAGGT TATTCTTCCA	660
10	GTTACACAGA ATCCTATGAG GATGGTTGTG AGGATTATCC TACTCTATCA GAATATGTTT	720
	AGGATTTTTT GAATCATCTT ACAGAGCAGC CTGGCAGTTT TGAAACTGAA ATTGAACAGT	780
	TTGCAGAGAC CCTGAATGGT TGTGTTACAA CAGATGATGC TTTGCAAGAA CTTGTGGAAC	840
15	TCATCTATCA ACAGGCCACA TCTATCCCAA ATTTCTCTTA TATGGGAGCT CGCCTGTGTA	900
	ATTACCTGTC CCATCATCTG ACAATTAGCC CACAGAGTGG CAACTTCCGC CAATTGCTAC	960
20	TTCAAAGATG TCGACTGAA TATGAAGTTA AAGATCAAGC TGCAAAAGGG GATGAAGTTA	1020
	CTCGAAAACG ATTTTCATGCA TTTGTACTCT TTCTGGGAGA ACTTTATCTT AACCTGGAGA	1080
	TCAAGGGAAC AAATGGACAG GTTACAAGAG CAGATATCTT TCAGGTGGT CTTGAGAAT	1140
25	TGCTGAATGC CCTGTTTCT AATCCTATGG ATGACAATTT AATTGTGCA GTAAAATTGT	1200
	TAAAGTTGAC AGGATCAGTT TTGGAAGATG CTTGGAAGGA AAAAGGAAAG ATGGATATGG	1260
30	AAGAAATTAT TCAGAGAATT GAAAACGTTG TCCTAGATGC AAAGTGCAGT AGAGATGTAA	1320
	AACAGATGCT CTTGAAGCTT GTAGAAGTCC GGTCAAGTAA CTGGGGCAGA GTCCATGCAA	1380
	CTTCAACATA TAGAGAAGCA ACACCAGAAA ATGATCCTAA CTACTTTATG AATGAACCAA	1440
35	CATTTTATAC ATCTGATGGT GTTCTTTTCA CTGCAGCTGA TCCAGATTAC CAAGAGAAAT	1500
	ACCAAGAATT ACTTGAAAGA GAGGACTTTT TTCCAGATTA TGAAGAAAAT GGAACAGATT	1560
40	TATCCGGGGC TGGTGATCCA TACTTGGATG ATATTGATGA TGAGATGGAC CCAGAGATAG	1620
	AAGAAGCTTA TGAAAAGTTT TGTTTGGAAT CAGAGCGTAA GCGAAAACAG TAAAGTTAAA	1680
	TTTCAGCATA TCAGTTTAT AAAGCAGTTT AGGTATGGTG ATTTAGCAGA ACACAAGAGA	1740
45	GCAAGAAAAT GTGTCACATC TATACCAAAT TRAGGATGTT GAGTTATGTT ACTAATGTAT	1800
	GCAACTTTAA TTTTGTTTAA CACTATCTGC CAAAATAAAC TTTATTCCTT ATAACTTAAA	1860
50	ATGTGTATAT ATATATAATA GTTATTATG TACAGTTAAT TCTACTGTTT TGGCTGCAAT	1920
	AAAATCGATT TTGAAATAAA TGAAATGTTG AAAATTTTGC TAGTTGGTTA GATGCTTATC	1980
	CTTTAAATTC TACTTTTCTT GAGGGGAAAA AGTCTTCGTC TGGAAATACA TATTACTGCA	2040
55	AAAATGTAGC ATCCTTTTTT AGGTAGGAGT ATTATAGCTT YCATTTTAGT TKGACATTTA	2100
	GTGTCCCAAT GAATTGAATT TCAAAATATGA ATCATAATCT TGAAAATCTT TAGCACTAAA	2160
60	GTCTTGGGAA TATATCAACA ACTGATTTAC ATATGCAGAT GCTATTGNA TACCAAGGGC	2220

TTTTAAATG TCATGGGGG GAAAAACCCA ACTTGGTGA ACTCCCAGCT AAACAACCAA 2280
 GACTTCACTG GAAGATTAT TCCAATCTA GGAATTGTC TTTTATT TTTTATTTT 2340
 5 AACTGRCTAA CTTCAATTACC TTAAAGCCTA GAACATTATT CTGCTTTATT TATATGGCTT 2400
 TCTCACTTTT ATTTTGTAGC AKGGGTGCA TCGACTTTT TACTAGAGAA TTTTACTAGA 2460
 10 TATTTGTCAT TCAAGTTTC ATCTGCTTTA TAATTGATAC ACCTTGAGGG TCACTTTTCT 2520
 AATACTTTTA CTATAATGTG GTACCACCTC AGCCCTAATA AATAATATTT TTACCTAATG 2580
 TCAAACTTTT TTCCAGCTAA CTA AAAACTG TGTACAAAAG GATTGCTTGT AAATATGCAT 2640
 15 GTAAATAGTT CTGTTAATAA CCCACTGTTT TACATTTGGT ACATCTGTGT CTGCTAATAC 2700
 AGTTAGCTTT CTCACTTTTC TGCTTGTGTTG TTCAGTCTGA ATTAAAATTA GACTTTGAAA 2760
 20 ATAAAGCTTA AAAAAAAAAA AAAAAAAAAA AAAA ACTCGA G 2801

25 (2) INFORMATION FOR SEQ ID NO: 97:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1631 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 30 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 97:

35 ATGGAGCCAA AGACAATCAC TGATGCTTTG GCTTCTAGTA TAATTAAGAG TGTGCTGCCT 60
 AATTTTCTTC CATACAATGT CATGCTCTAC AGTGATGCTC CAGTGAGTGA ACTGTCCCTC 120
 GAGCTGCTTC TGCTTCAGGT TGTCTTGCCA GCATTACTCG AACAGGGACA CACGAGGCAG 180
 40 TGGCTGAAGG GGCTGGTGCG AGCGTGGACT GTGACCGCCG GATACTTGCT GGATCTTCAT 240
 TCTTATTTAT TGGGAGACCA GGAAGAAAAT GAAAACAGTG CAAATCAACA AGTTAACAAT 300
 45 AATCAGCATG CTCGAAATAA CAACGCTATT CCTGTGGTGG GAGAAGGCCT TCATGCAGCC 360
 CACCAAGCCA TACTCCAGCA GGGAGGGCCT GTTGGYTTTC AGCYTTACCG CCGACCTTTA 420
 AATTTTCCAC TCAGGATATT TCTGTTGATT GTCTTCATGT GTATAACATT ACTGATTGCC 480
 50 AGCCTCATCT GCCTTACTTT ACCAGTATTT GCTGGCCGTT GGTAAATGTC GTTTTGGACG 540
 GGGACTGCCA AAATCCATGA GCTCTACACA GCTGCTTGTG GTCTCTATGT TTGCTGGCTA 600
 ACCATAAGGG CTGTGACGGT GATGGTGGCA TGGATGCCTC AGGGACGCAG AGTGATCTTC 660
 55 CAGAAGGTTA AAGAGTGGTC TCTCATGATC ATGAAGACTT TGATAGTTGC GGTGCTGTTG 720
 GCTGGAGTTG TCCCTCTCCT TCTGGGGCTC CTGTTTGAGC TGGTCATTGT GGCTCCCCTG 780
 60 AGGGTTCCCT TGGATCAGAC TCCTCTTTT TATCCATGGC AGGACTGGGC ACTTGGAGTC 840

CTGCATGCCA AAATCATTGC AGCTATAACA TTGATGGGTC CTCAGTGGTG GTTGAAAAC 900
 GTAATTGAAC AGGTTTACGC AAATGGCATC CGGAACATTG ACCTTCACTA TATGTTCGT 960
 -5 AAAC TGGCAG CTCCTGTGAT CTCTGTGCTG TTGCTTTCCC TGTGTGTACC TTATGTCATA 1020
 GCTTCTGGTG TTGTTCCTTT ACTAGGTGTT ACTGCGGAAA TGCAAAACTT AGTCCATCGG 1080
 10 CGGATTTATC CATTTTTACT GATGGTCGTG GTATTGATGG CAATTTTGTC CTTCCAAGTC 1140
 CGCCAGTTTA AGCGCCTTTA TGAACATATT AAAAATGACA AGTACCTTGT GGGTCAACGA 1200
 CTCGTGAAC ACGAACGGAA ATCTGGCAAA CAAGGCTCAT CTCCACCACC TCCACAGTCA 1260
 15 TCCAAGAAT AAGTAGTGTG TCTCAACAAC TTGACCTTCC CCTTTACATG TCCTTTTTTG 1320
 TGGACTTCTC TCTTTGGAGA TTTTCCAG TGATCTCTCA GCGTTGTMTT TAAGTTAAAT 1380
 20 GTATTTGACT TGTGTTCTCA GCATTGAGAG AGCAGCGGTG TAAGATTCTG CTGTTCTCCC 1440
 TGGATCTTCT GACATTACTG CTGTCTGAGA TTTGTATATG TGTAAATACA AGTTCCTTGA 1500
 TACCCTAAAA CCTTGGATTA AACAGAATGT GCATTGTACA TCTTTAACA AAATGTATAT 1560
 25 TAATTTATTA AATCTAGTTG TCACTTTAAA AAAAAAAAAA AAAAAACTCG AGGGGGGCCC 1620
 GGTACCCAAA T 1631

30

(2) INFORMATION FOR SEQ ID NO: 98:

35

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 504 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 98:

45

CCGAGCTGGG CGAGAAGTAG GGGAGGGCAC GAGCCGCCGC GGTGGCGGTT GCTATCGCTT 60

CGCAGAACCT ACTCAGGCAG CCAGCTGAGA AGAGTTGAGG GAAAGTGCTG CTGCTGGGTC 120

TGCAGACGCG ATGGATAACG TGCAGCCGAA AATAAAACAT CGCCCCTTCT GCTTCAGTGT 180

50

GAAAGGCCAC GTGAAGATGC TCGGCTGGA TATTATCAAC TCACTGGTAA CAACAGTATT 240

CATGCTCATC GTATCTGTGT TGGCACTGAT ACCAGAAACC ACAACATTGA CAGTTGGTGG 300

AGGGGTGTTT GCACTTGTGA CAGCAGTATG CTGTCTTGCC GACGGGGCCC TTATTTACCG 360

55

GAAGCTTCTG TTCAATCCCA GCGGTCCTTA CCAGAAAAAG CCTGTGCATG AAAAAAAGA 420

AGTTTTGTAA TTTTATATTA CTTTTAGTT TGATACTAAG TATTAAACAT ATTTCTGTAT 480

60

TCTTCAAAA AAAAAAAAAA AAAA 504

(2) INFORMATION FOR SEQ ID NO: 99:

-5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1416 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

10

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 99:

15	GGCACGAGGG AGGGAGCCCT CTCGTTGGG TGACTCTTGT GTGCCCTTTA GACAGGCTGG	60
	CCTGCCGGTT CCACAGGTA CAGTTAGGAC TTGAGTCTTT CTTTTCTGT TTTGAGTTGG	120
	TGAGTGAGTG ATAGGGTAAC ATGGGCCTTC AGGATGACCC CTTGGAAC TGCCGAGTTC	180
20	CTTAAATCTC AGCTGGGATC CTGGACCTGG GAGGCCCTG TGAGGGCCAG CTCTGGAAAA	240
	ACCTGGGAGT TGATGCCGA GCTGTGGAAG AACTCTGCTC GAGGGCAGG TGCCCTGGAA	300
	CACTGGTAGT TCTGGGGCTG GGAGGGAGAG GGGCTCCGGC TTTCTCTGAA ATGAACACTG	360
25	CTCTTCAGCA GTTCAAGTAC TTGTTCTCAA AACATTTTCT AATTGATTGG TAGGTTTTC	420
	TAAGCATTGT TTCTTTAAGG CATGGAAAGG GAAGAATGCT CAAGCAAGTC ATGTTTGT	480
30	TCAGTGGGAT GGGCCCGCGT TCTCACTGCT GGGGGCTTCC CCTTCATGTG GCACCTTTGT	540
	GCAGGGGCCA CCAGGCAGAC TCTTCCCACC TTCTCCCACT GAAGCACCAA GGGGCTTGA	600
	ACCGTAATTT GGCTAATCAG AGGCATTTT TTTGTCTAG TATCTTTCAC ACTTGTCCAA	660
35	CCGTCTTATT TTTTAAAAG TTCTGTGCT TGTATTAAAC CGAACTAGA GAGAAATAGT	720
	TTCTGAAGCC AGTTTATGT GAAGATCCCC AAGGGGAGGT TCGGTAGAGA AAAATAGTAA	780
40	GCTGGTTTAG AAAGTACGA GGCACACAG CCAGGACGCA TTGGAGAGGA ATTTGCCAAA	840
	GATCTACCCCT GAGATAACGC CTGTCCAGTG TCTTCACCAC GTGAATAACC AGCGCTCCAA	900
	AGTGTTTTTC TGCTTTGAAA AAAAAATTC CACAAGCTTT TAAAGGTGCA TTTAAGAATC	960
45	CATGTGACTT TAGAATGGAA CTGCCGGCCC TGGCAACTGT CACGTGTGCT AGAAGGTTCG	1020
	ATGCCCTCTGG AATGCATGTG ATACTCATCT CCAATTTTGT TCCTTGATG CATTTTGT	1080
50	CTTTTAGCAG ATCTGTCCCT GTGGGTGGTG TCTAAGAAGT CGGACACCTT GGTTTTGTG	1140
	TTAGATTGAG CTGGGCAGCT GCAATCAGCT TCTTTATATG CAAATTAGGC ACGACCCATC	1200
	TGTGGTTCCT GGTGGTGGC TAATGAAGTG AGGGGAGGGA GGGATGTCAC CCCAAAAGTA	1260
55	GGCCCTCCCA TTGGCTTTGG CCAGGCCAGA CACTTCACAT CGTTTACATG GTTCTGTGTA	1320
	ATTTTAAAGT TTATGTGTAT AAAGCGAAGC TGTTTCTGTG AACTGTATA TTTGTAAAT	1380
60	AAATATATTG CTAATTGAAA AAAAAAAAAA AAAAAA	1416

5 (2) INFORMATION FOR SEQ ID NO: 100:

(i) SEQUENCE CHARACTERISTICS:

10 (A) LENGTH: 2847 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 100:

15 GGCTAGGACA ATTTTGGTGC TTTACCTATC TCTGCAAAGA CTGGAGAATT TGGCATACCA 60
TTAATTACAA CCACCAATCA TATCCAACAA AAGTACCCTA AAAGAAGGAC CAGTGCCAC 120
TCTCGAAAAA ATTTAAGTAT CAGAAGATTA AAAAGATTTT AGGATTTGGA AGCTTGTATT 180
20 GTCTTTCCCC AATAATCATT GTTTGATCTC CAAATAGTAG CCTTATATTA GCAATRGACA 240
GATCATTTGGT TCTCCATATC TGATCATATG TTAATACTTT OGAATCAGTA TTTGGGCAAA 300
25 TTCAAGCATT TATGCAGTGG ATATAAATGG AAATATAAAA ATATTTGCCA ACCTGTCTCA 360
GTAACCTATC ATATCTCTGT GNATCCTCAA GGAAAGCACT TTTGCTTTTA CTTAGAAAGC 420
GTTTCAGATT TGCTTTATAG ACTCCTGCTG TCTTCAGTAC CTGATAAAAC TTTAACCAGG 480
30 GAAGCATTAAC ACACAGTGCA GCAGCTTTTG CCCAGGCTTC TAAGTTCTTG CCGGCAGCAT 540
TTATCAATGT AAGAACTAGG ATGCTTCTTG CAGTGGCACT ACCTTCCCCT AGAGCTGGAG 600
35 CATGCTGCTT GGCCTTAAGC CCCAGCATGA TGAGGCTTCC CTCCTGCCAG GTCAGTAAAA 660
GTTAGAGAGC TCAGAATTGG GTCTTGCTTG GGTGCAGGTG GCAGGGTTTG CTGAAACCCC 720
TAAAGAGAAG TCACCAAGGG AGGCAGGTAA TGAATGTTTC CAGAATCAGT CKGATACTCA 780
40 TAGCAATTTC TGGCTATCTT TCAAAATGTTG AATTTCTGGA TGCTGAGAGG GACTTTGATT 840
TGATATCATT AAATCCAGGA CAGTCCCAAG AAGTGCTTGG AGTCTCGGCT CTGACAGCCC 900
45 AAGAAGGGAA ATAACCTGTA TTAAGGAACA ACTATGAGCC AGGCCCTGAG CTGTCTCTTA 960
GATAATAAAA CAGATGGGGA GTGGAAGAGT CATTTGCTTC AAGTTATACA GCTAGGAAAT 1020
ACTCAAGCCA AATCTTGAAC GCAGCTCCCC CTAATCTCTG GGACAGGCAC TTTGTACCAC 1080
50 ACACCATGGT CCACCTAAAA ACAGAAGGAT AAAAAGACTT CAGGTTTTC CACTGTGTGC 1140
TGACCATCCC AATTTATGAA TCTTCTTCAA AATGACATTT CACAGTTATA GTTAGGGCTC 1200
55 AGAAATGGCA TTGAGGTAGC CTTATTTCTC CCCTTTAGCA GATGCTTTAA GTACACATTG 1260
CTGACTTGAG CCCACCCCA GGAGTTAGGA GAACATTTCC TTTTTCATGC CATCTTCCAT 1320
60 AAATAAGGTG TTTCTTGCC TTCAAAGATA TAGAACTTTG CAGCAGTAGT AAAAGTGAAG 1380

	GGTGTCTGTC TCTCTACTCA ACTTTATTTG AAAATGTCTG CAGCTTCACT CCTGTAGAAA	1440
	AGGAAATCTT CATATTTTAG TAACTTAGC CGCCAGTGTA CTCTGTGAGG ATGTGGCAAT	1500
- 5	TCAAAGTCCA GTGAATCTGG CTCTCTTACT GATTCCTGGT TTTAGTGTGT GTGTGGGGG	1560
	AGTGTGTACC TATATATAAA GGACAAGTGT GATATGTGTG TATATGTATA TACATACATA	1620
10	CATGTCCACA CACACACACA CAATATTTGA GAGCTAAGGA AAACCTCAAAG CAGCCCCCTC	1680
	ATTATCTTGC GTACTACTTC AAAGATTTCT GTCAGCCCTA ATTACAAGTG TCACCATATA	1740
	GTTGGGGCTT AGGTACTTGC TTACAGGAAG AGCAATTCCC TAGCAAAGGT CATTAGCTCC	1800
15	TAAGGCAC TGAGTCAAAGTG ACAGCCCTGA AGGAAATTGC ACTCCAGCCC TCCTCCAGGA	1860
	TGTCTAATAA GATGGGAAAC TTGGATGCCC AGCCATTTTG GTGACCTGAG AGTCTAACTA	1920
20	CTCCAGTTAG ACCTAAGGGC ACAAATGCAG AATTCATGAC CTGTGTAGTTG TGGCAGGGTC	1980
	TAGGAAGTCC TCTCTCCCCA AGTAGAAAAT ATTCTCTTGC CATTCCTGAA ATTCACATT	2040
	CATATAATGG CTGTGCAATA CATGCTTCTC AATAAGAAAA TTAAGTGCAT GTTTACTGTG	2100
25	TGCTGATCAC ATCAGATTTT TATGTTTAAA AAAATCTCAT TATGGNITGA GTCCAGCCCA	2160
	GCTCTAAGAG AAAAAGAAGG CCCATATGGG AGACTTCAGT CTCATTATTA TTGCCTTTAT	2220
30	CCAGCAGTGC TTATRAAGCC CCTACCCTG TCCCATTCGA GAAACCATAA GACTCAGGCA	2280
	GTTCTTGATT CTGGAGGCCT GCCTGGTAAG ATAAGATAGT ATAATTGTGA ACTGAGAACA	2340
	TACCAGAAAC AGCAGAACGA GGGCCAGAGC AGAAAAATGA AAATAAGTGG AGACACTTAT	2400
35	GGATACATTG GTGCAAAAAA AGCCACGGGS CCCATACTGG GCTTGATATG ACTTTGAGGG	2460
	GACAGCAGAT TAATACTTAA TGAGGGTTAA ACCTGACCAG TCTTTCTACA GTGACAGGCC	2520
40	AACTGTCATG AATGGGGAGA ACCAATGAAT CCATTGTCTT CTGCTATTTT TCCTGTGCAC	2580
	AGTCACATTC CCTCCTTAGG AATCTTCCCC TTCCACCTT TACATTAAAC AAGGGAACAC	2640
	TGAATCTTTC AAGGGAATTA CACGTTTGGG TTAATGTTTC AGTATATCAT TTTCATACTG	2700
45	TAAATTATTT TGTAAGAGAG ATTTACTGCT ATCCCAGGAT GTTCGGACTT GGTGCCCTTG	2760
	TGCATTTGGA AATCAATAAA CTATTACTGG AAATGCCAAA AAAAAAAAAA AAAAAAAAAA	2820
50	NAAAAAACTC GAGGGGGGCC CGTACCC	2847

55 (2) INFORMATION FOR SEQ ID NO: 101:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1394 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 101:

5	GAGATTGGTG GAGGAGAGTA AATAATCTAG AGGCAAGAGT TCAGTGAGGG CCAAGGGGGA	60
	CCCCCAGAAA AAGGTATGGA GCTAACTCAT CTCTTTTACA AGGGGTGGCC ATGACTTACT	120
	GTTCGAAAGT ACTCAGTGTA TATTTAATGT TGATGTGTGA ATTTTAGTTA CGAGAGGGAA	180
10	GAACAATTTT ACTTCTGTCC TTATTTCACT TGCTGAAAAG CTGTGGGACA AAATGTATGG	240
	AATAGACAAG GCCACTTTCT TTGTGATTTC TGCTTTTCAT GCATATTATT TTATTTACCC	300
	ATAATTTCCA AGAGGTTTGG CGTTCCGCTC TCCTGCTTTT TTCTTTTCATC CACCCCTTTC	360
15	CTTTTPTTGG AAGGGGGTTA TATATGAGAG TTCATTGAAG AAGTCCAGTG AGGCTGAAGT	420
	AAAGGGGCAA GATAGGGCAG TTAACATAAG AGCACTTTAT TTCTTTGAAG CCTTTCTAAG	480
20	AAAGAAATGG GGGTGCGAGT GGCTTGAATC TCCCATGATG TTGGAGGGCA CTTAGTGGGG	540
	TTGAAGTATG ACATAATATT TCCCATGAGG GAAAGGAGAA TTTCTCTTAG AGGGTGGCAA	600
	AATGCCTTTG CCCAGTGTCC CTATTTTAGG CATCTTTTCC TTCCTTATTC CTTCCAGTCA	660
25	GGGTGTGTCC TATACAAAAC TTCCCATCAG TTCTCCTCAA TATTCCCCAT TTGTAAATGA	720
	TCACTTCTCT TTTCTAAACC CTTTTCCTGT TCAGATCCAT ACAGGATTTG CAAGGGTAGG	780
30	ATCATACATG CAAATGCCCC TTGTTCATCT GTGTCTTCTG CAACTAGTC TCATGAAGAA	840
	TTCTGGCGTG CAGCAGGGTA GCTGAAGTTT GGGTCTGGGA CTGGAGATTG GCCATTAGGC	900
	NTCNCTGAGA TTCCAGCTCC CTTCCACCAA GCCCAGTCTT GCTACGTGGC ACAGGGCAAA	960
35	CCTGACTCCC TTTGGGCCTC AGTTTCCCCT CCCCTTCATG AAATGAAAAG AATACTACTT	1020
	TTTCTTGTGT GTCTAGCATT GCTGGACACA AAGGTAGTTC ATTATGTGTG TATTGGGTGA	1080
40	TGTGTGCAAA ACTGCAGAAG CTCACTGCCT ATAAGAGGAA ATAAGAGAGA AAGTGGAGGA	1140
	GAGGGACAAA AGGAGTAATT ATTTGGTATA GATCCACCCA TCCCAACCTT TCTCTCCTCA	1200
	GTCCCTGCTC CTCATGTTTC TGGTTTGGTG AGTCTTTTGT GCCACCACCC ATAATGCTTT	1260
45	GCATTGCTGC ATCCTGGGAA GGGGTATAT GGTCTCACAA GTTGTGTGCA TTGTTTTTTT	1320
	GCATGCTTTC TTAATAAAAA AAAAAAAAAA ATGTTTANAG TTTTATCTTA AAAAAAAAAA	1380
50	AAAAAAAAAA ACCC	1394

55 (2) INFORMATION FOR SEQ ID NO: 102:

(i) SEQUENCE CHARACTERISTICS:

- 60 (A) LENGTH: 794 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 102:

5 GGMROGAGGC GGAGTAAAGG GACTTGAGCG AGCCAGTTGC CGGATTATTC TATTTCCCTT 60
 CCCTCTCTCC CGCCCCGTAT CTCTTTTCAC CCTTCTCCCA CCCTCGCTCG CGTACCATGG 120
 CGGAGCGTCG GCGGCCACTC AGTCCCATTC CATCTCCTCG TCGTCCTTCG GAGCCGAGCC 180
 10 GTCCGCGCCC GCGCGCGGCG GGAGCCCAGG AGCCTGCCCC GCCCTGGGGA CGAAGAGCTG 240
 CAGCTCCTCC TGTGCGGTGC ACGATCTGAT TTTCTGGAGA GATGTGAAGA AGACTGGGTT 300
 15 TGTCTTTGGA CACGCTGATC ATGCTGCTTT CCCTGGCAGC TTTCAGTGTC ATCARTGTGG 360
 GTTCTTTAMC TCATCCTGGC TCTTCTCTCT GTCACCATCA RCTTCAGGAT CTACAAGTCC 420
 GTCATCCAAG CTGTWCAGAA RTCAGAARAA GGCCATCCAW TCCAAAGCCT ACCTGGACGT 480
 20 AGACATTACT CTGTCTCAG AAGCTTTCCA TAATTACATG AATGCTGCCA TGGTGACAT 540
 CAACAGGGCC CTGAAACTCA TTATTCGTCT CTTCTGGTA GAAGATCTGG TTGACTCCTT 600
 25 GAAGCTGGCT GTCTTCATGT GGCTGATGAC CTATGTTGGT GCTGTTTTTA ACGGAATCAC 660
 CCTTCTAATT CTGCTGAAC TGCTCATTTT CAGTGTCCCG ATGTCTATG AGAAGTACAA 720
 30 GACCCAGATT GATCACTATG TTGGCATCGC CCGAGATCAG ACCAAGTCAA TTGTTGAAAA 780
 GATCCCAAGC AAAA 794

35

(2) INFORMATION FOR SEQ ID NO: 103:

(i) SEQUENCE CHARACTERISTICS:

40 (A) LENGTH: 1544 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 103:

45 TTTGCTTGCT AGTCTGAACC AAAGAGTTGT TTGGCATTTT GCTGTGTTGG CCATTTCTGG 60
 AGCAAGAGGG TCTTCTTCCT CCTTCCCCCA GCCAGCCAGC TGTCTGGGG CCAGGCTTTT 120
 50 CTGGGTGGAA AGAAGTATAC CTTTCCCTGG GGCCCTAGGA TAGCAAAGTG AGCCATAGTG 180
 GGCCAGGCTG CCCTCCATGC TGGGCCCCAG CCCAGGTCTG CACTCGCCTG GATCACCTTC 240
 55 TTTGAGCCTT AGCCATCTCC TGTACGGTAG GAATGAACTT GCCAGCCTTC AGGYTCGTTT 300
 AGCTATGACC ATCTGTGCGG TCAGGTACA CTCAGCTCTC CTCCCCAACT CCAGCAGCCT 360
 TTAAGAAGTG TCCCTTTGGC GCCCCCTGGA GGCAGAGCAC TGAGCTGGAC CCTGGGTAGA 420
 60 CTCCACAGG GAGGACGGAG CTGGCCTCAG GAGTGGGACA CCCAGACTTG GCAGGGCCTT 480

	CAAGAGGCCT GTGTGGGGC CCCAGGAATC CTTAGCTGAA GCGGGGAGAC TCACTCTCCA	540
	TCTCAGGAAA TTCTAGCCCT TGCCCTCAGG GAGCCACGGT TGAGGGTGAG GCCCAACACC	600
-5	TGCCCTTAGGG CCCTGGGTGG GCAAGTCTGG GCCCTGGGGT AGGGAGGGAG ACTCAGGCCC	660
	ACACTTGGGT ATTTTCTAAT TTCAGACAAA CACACACTCA GCGCGCACTC ACTGATTCTT	720
10	ACACATTGCC AAGATTTTAC ACATGTGACC AGGGGCCACC AAAGTCCCTG TGACCTTTGT	780
	GACTAGGATC CTAATTTCTC TATTTTCTCC TGGGTGCTG GGTCTGTGTC ACCTGGGGCA	840
	GTGTGGATAA TGTTTAGTTC TGTGACACTG TTTTTTGGG GTGGCACCTG GTTCTCOGAT	900
15	GCCTGGGCTG GTGTCAGGCC CAGGACTGTA GTGCTGGGAG CAGTAAAGCT CAGCTCTGTG	960
	TAATGAGTGA TGCTATGGCT TGCTCGTGTC TTATGATCCA ATCCTTTTCT ACATCAGCCC	1020
20	TTGTTTTGTT TTATGGCTAG TCTTATCTGG CCTGGTTATT TCCTTGCGGG GAGGAGAGGG	1080
	TTTGCTAATC TGCTCCAGC CCAACCTATT ACCACCCAC CTCGCTGGGA CCTACTGCTC	1140
	GGGAGGCAGC AGACAGGGAG CCACCAGCAG TGGCTTCCTG GCCCTGTGCT GGGGGTGGG	1200
25	GGAAGCTGGG GGCACATGTG GCCCTTGCTT TCTGAGCAGC TCCAGTGCC AGGGCTTTGA	1260
	GACTTTCCCA CATGATAAAA GAAAAGGGAG GTACAGAAGT TCCAATTCCC TTTTTATTTT	1320
30	GCTGGTTGGT ATCTGTAAAT GTTTAATAAA TATCTGAGCA TGTATCTATC AACGCCAAGA	1380
	ATTTCAAAGT CTCCTTCAAC AATATGAGGC TTMTAGGATG TTTATATTC TCATCCCTC	1440
	TTGTTTCCA GGTMTGTCAG GGAAAAAAG TCTGGAATTA TAGATACAGC TTATTATTAA	1500
35	ATTGTTCCTT GCATAAAAAA AAAAAAAAAA AACNCNNGGG GGGG	1544

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(2) INFORMATION FOR SEQ ID NO: 104:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 871 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 104:

50

ACCCACGCGT CCGNCTTGTC CACCCGGGGG CGTGGGAGTG AGGTACCAGA TTCAGCCCAT	60
TTGGCCCCGA CGCCTCTGTT CTCGGAATCC GGGTGCTGCG GATTGAGGTC CCGGTTCTTA	120
55 AGGTGGGTCTG CTGTCCACCC GGGGGCGTGG GAGTGAGGTA CCAGATTCTAG CCCATTTGGC	180
CCCGACGCCCT CTGTTCTCGG AATCCGGGTG CTGCGGATTG AGGTCCCGGT TCCTAACGGA	240
CTGCAAGATG GAGGAAGGCG GGAACCTAGG AGGCCTGATT AAGATGGTCC ATCTACTGGT	300

60

CTGTGCAGGT GCCTGGGGCA TGCAAATGTG GGTGACCTTC GTCTCAGGCT TTCCTGCTTT 360
 TCCGAAGCCT TCCCCGACAT ACCTTCGGAC TAGTGCAGAG CAAACTCTTC CCCTTCTACT 420
 -5 TCCACATCTC CATGGGCTGT GCCTTCATCA ACCTCTGCAT CTGGGCTTCA CAGCATGCTT 480
 GGGCTCAGCT CACATTCTGG GAGGCCAGCC AGCTTTACCT GCTGTTCCCTG AGCCTTACGC 540
 10 TGGCCACTGT CAACGCCCCG TGGCTGGAAC CCCGACCAC AGCTGCCATG TGGGCCCTGC 600
 AAACCGTGGG AGAAGGAGCG AGGCCTGGGT GGGGAGGTAC CAGGCAGCCA ACAGGTTCCT 660
 GATCCTTAAC GCCAGNTGCG AGAGAAGGAC CCCAAGTACA GTGCTCTCCG CCAGAATTTC 720
 15 TTCCGCTACC ATGGGCTGTC CTCTCTTTGC AATCTGGGCT GCGTCTGAG CAATGGGCTC 780
 TGTCTCGCTG GCCTTGCCCT GGAAATAAGG AGCCTCTAGC ATGGGCCCTG CATGCTAATA 840
 AATGCTTCTT CAGAAAAAAA AAAAAAAAAA A 871
 20

25 (2) INFORMATION FOR SEQ ID NO: 105:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 404 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 30 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 105:

35 GGCACGAGTT ATAGCATGGC ATTCATACTT TTGTTTTATT GCCTCATGAC TTTTTTGAGT 60
 TTAGAACAAA ACAGTGCAAC CGTAGAGCCT TCTTCCCATG AAATTTTGCA TCTGCTCCAA 120
 AACTGCTTTG AGTTACTCAG AACTTCAACC TCCCAATGCA CTGAAGGCAT TCCTTGTCAA 180
 40 AGATACCAGA ATGGGTTACA CATTTAACCT GGCAAACATT GAAGAACTCT TAATGTTTTT 240
 TTTTAAATAA GAATGACGCC CCACTTTGGG GACTAAATTT GTGCTATTCG CGAGAAGCAG 300
 45 TCTAAAATTT ATTTTTTTAA AAAGAGAAAC TGCCCCATTA TTTTGGTGGG GTTGGTTTTT 360
 AATTINTAAT NTGAAAAATT TTTTGGGGT TTTTGGGGCC ATGG 404

50 (2) INFORMATION FOR SEQ ID NO: 106:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1542 base pairs
 55 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 106:

60

	GTCAGACAGG TGGAGCCGCC GGGCAGGAG TCTCAAAGAG CCAGGCTCCA GGAGAGGAAG	60
	GGCTCTRCGA GAGGAGAGAG GAGAGCGCTG GAGAGGAGAG GCTGGAGAGT CCTTAGCCAG	120
5	GATGGAGGCT GTTGTGAACT TGTACCAAGA GGTGATGAAG CACGCAGATC CCCGGATCCA	180
	GGGCTACCCT CTGATGGGGT CCCCTTGCT AATGACCTCC ATTCTCCTGA CCTACGTGTA	240
10	CTTCGTTCTC TCACTTGGGC CTCGCATCAT GGCTAATCGG AAGCCCTTCC AGCTCCGTGG	300
	CTTCATGATT GTCTACAACT TCTCACTGGT GGCACTCTCC CTCTACATG TCTATGAGTT	360
	CCTGATGTCG GGCTGGCTGA GCACCTATAC CTGGCGCTGT GACCTGTGG ACTATTCCAA	420
15	CAGCCCTGAG GCACTTAGGA TGGTTCGGGT GGCTGGCTC TTCTCTTCT CCAAGTTCA	480
	TGAGCTGATG GACACAGTGA TCTTTATTTCT CCGAAAGAAA GACGGGCAGG TGACCTTCCT	540
20	ACATGTCTTC CATCACTCTG TGCTTCCCTG GAGCTGGTGG TGGGGGTAA AGATTGCCCC	600
	GGGAGGAATG GGCTCTTTCC ATGCCATGAT AACTCTTCC GTGCATGTCA TAATGTACCT	660
	GTACTACGGA TTATCTGCCT TTGGCCCTGT GGCACAACCC TACCTTTGGT GGAAAAAGCA	720
25	CATGACAGCC ATTCACTGA TCCAGTTTGT CTTGGTCTCA CTGCACATCT CCCAGTACTA	780
	CTTTATGTCC AGCTGTAACCT ACCAGTACCC AGTCATTATT CACCTCATCT GGATGTATGG	840
30	CACCATCTTC TTGATGCTGT TCTCCAACCT CTGGTATCAC TCTTATACCA AGGGCAAGCG	900
	GCTGCCCCGT GCACTTCAGC AAAATGGAGC TCCAGGTATT GCCAAGGTCA AGGCCAACTG	960
	AGAAGCATGG CCTAGATAGG CGCCACCTA AGTGCCTCAG GACTGCACCT TAGGGCAGTG	1020
35	TCCGTCAGTG CCTCTCCAC CTACACCTGT GACCAAGGCT TATGTGGTCA GGACTGAGCA	1080
	GGGACTGGC CCTCCCCTCC CCACAGCTGC TCTACAGGA CCACGGCTTT GTTCTCTCAC	1140
40	CCACTTCCCC CGGGCAGCTC CAGGGATGTG GCCTCATTGC TGTCTGCCAC TCCAGAGCTG	1200
	GGGCTAAAA GGGCTGTACA GTTATTTCCC CTCCCTGCC TTAAAACTTG GGAGAGGAGC	1260
	ACTCAGGGCT GGCCCCACAA AGGGTCTCGT GGCCTTTTTC CTCACACAGA AGAGGTCAGC	1320
45	AATAATGTCA CTGTGGACCC AGTCTCACTC CTCCACCCCA CACACTGAAG CAGTAGCTTC	1380
	TGGGCCAAAG GTCAGGGTGG GCGGGGGCCT GGAATACAG CCTGTGGAGG CTGCTTACTC	1440
50	AACTTGTTGC TTAATTAAAA GTGACAGAGG AAACCANAAA AAAAAAAAAA AAAAAGTCTGA	1500
	GGGGGGCCCG TACCCAAATC GCCGGTATGA TCGTAAACAA TC	1542

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(2) INFORMATION FOR SEQ ID NO: 107:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2327 base pairs

(B) TYPE: nucleic acid

60

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 107:

-5	GGTAGCTCAN TGCAGTGAAG TAGTCTTACT GGAAACAAAG CCCTTTATCA AGAATAATTA	60
	ACTCTTCCCT TTTCTTTTGG GAGAGGTGCT TTGTTTCTGA TCGGACCAAT TCACTGCAGC	120
10	AAGCAACACA GTATCTTRAG CAGAAGATCG GGACTTGAGG CCATGTTGCG GAGGGCCAGT	180
	RACATTATCT GGACTCTGGA GTGTGAGGAA TATGGACTCC ACTCTTCACT ATATTACAR	240
	CGATTCAGAC TTGAGCAACA ATAGCAGTTT TAGCCCTGAT GAGGAAAGGA GAACTAAAGT	300
15	ACAAGATGTT GTACCTCAGG CGTTGTTAGA TCAGTATTTA TCTATGACTG ACCCTTCTCG	360
	TGCACAGACG GTTGACACTG AAATGCTAA GCACTGTGCA TATAGCCTCC CTGGTGTGGC	420
20	CTTGACACTC GGAAGACAGA ATTGGCACTG CCTGAGAGAG ACGTATGRGA CTYTGGCCTC	480
	AGACATGCAG TGGAAAGTTC GACGGAACCT TAGCATTCTC CATCCACGRG CTTCAGTTA	540
	TTCTTGGAGA TCAATTGACA GCTGCAGATC TGGTTCCAAT TTTTAATGGA TTTTAAAG	600
25	ACCTCGATGA AGTCAGGATA GGTGTCTTAA AACACTTGCA TGATTTTCTG AAGCTTCTTC	660
	ATATTGACAA AAGAAGAGAA TATCTTTATC AACTTCAGGA GTTTTGTGTG ACAGATAATA	720
30	GTAGAAATTG GCGGTTTCGA GCTGAACTGG CTGAACAGCT GATTTTACTT CTAGAGTTAT	780
	ATAGTCCAG AGATGTTTAT GACTATTTAC GTCCCATGTC TCTGAATCTG TGTGCAGACA	840
	AAGTTTCTTC TGTTGCTTGG ATTTCTTACA AGTTGGTCAG CGAGATGGTG AAGAAGCTGC	900
35	ACGCGGCAAC ACCACCAACG TTCGGAGTGG ACCTCATCAA TGAGCTTGTG GAGAACTTTG	960
	GCAGATGTCC CAAGTGGTCT GGTGCGCAAG CCTTTGTCTT TGTCTGCCAG ACTGTCAATG	1020
40	AGGATGACTG CCTTCCCAGT GACCAGTTTG CTGTGCATCT CATGCCGAT CTGCTAACCT	1080
	TAGCAAATGA CAGGTTTCCT AACGTGCGAG TGCTGCTTGC AAAGACATTA AGACAAACTC	1140
	TACTAGAAAA AGACTATTTT TTGGCCTCTG CCAGCTGCCA CCAGGAGGCT GTGGAGCAGA	1200
45	CCATCATGGC TCTTCAGATG GACCGTGACA GCGATGTCAA GTATTTTGCA AGCATCCACC	1260
	CTGCCAGTAC CAAAATCTCC GAAGATGCCA TGAGCACAGC GTCTCTCAACC TACTAGAAGG	1320
50	CTTGAATCTC GGTGTCTTTT CTGCTTCCAT GAGAGCCGAG GTTCAGTGGG CATTCGCCAC	1380
	GCATGTGACC TGGGATAGCT TTCGGGGGAG GAGAGACCTT CCTCTCCTGC GGACTTCATT	1440
	GCAGGTGCAA GTTGCTTACA CCCAATACCA GGGATTTCAG GAGTCAAGAG AAAGTACAGT	1500
55	AAACACTATT ATCTTATCTT GACTTTAAAG KKWAWKMMWW KCTCAGMSRA TTATAMTTSW	1560
	CWMMRARGSM WYMAAWSCTK SWGCTCYWCC KSRSTGRMKG MMRCTCTAGA AYTRGYRGAK	1620
60	CMYYYKSGCT KMWGGAACKS GGCASGAGCC AGAGACCTGC ATTGCTTTCT CCTGGTTTTA	1680

TTTAACAATC GACAAATGAA ATTCTTACAG CCTGAAGGCA GACGTGTGCC CAGATGTGAA 1740
 AGAGACCTTC AGTATCAGCC CTAACCTCTC TCTCCCAGGA AGGACTTGCT GGGCTCTGTG 1800
 -5 GCCAGCTGTC CAGCCCAGCC CTGTGTGTGA ATCGTTTGTC ACGTGTGCAA ATGGGAAAGG 1860
 AGGGGTTTTT ACATCTCCTA AAGGACCTGA TGCCAACACA AGTAGGATTG ACTTAAACTC 1920
 10 TTAAGCGCAG CATATTGCTG TACACATTTA CAGAATGGTT GCTGAGTGTC TGTGTCTGAT 1980
 TTTTTCATGC TGGTCATGAC CTGAAGGAAA TTTATTAGAC GTATAATGTA TGTCTGGTGT 2040
 TTITAACCTG ATCATGATCA GCTCTGAGGT GCAACTTCTT CACATACTGT ACATACCTGT 2100
 15 GACCACTCTT GGGAGTGCTG CAGTCTTTAA TCATGCTGTT TAAACTGTTG TGGCACAAGT 2160
 TCTCTTGTC AAATAAAATT TATTAATAAG ATCTATAGAG AGAGATATAT ACACTTTTGA 2220
 20 TTGTTTCTA GATGTCTACC AATAAATGCA ATTTGTGACC TGTAAAAAAA AAWAAAAAAA 2280
 ACTCGAGGGG GGCCCGGTAC CCAAATCGCC GATATGATCT AANCATC 2327

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(2) INFORMATION FOR SEQ ID NO: 108:

(i) SEQUENCE CHARACTERISTICS:
 30 (A) LENGTH: 1062 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 108:

GGCCGCCGAG GCGCAACAGC CGTTCTGTCA GCTCTGGGTC CAACCGGACT AGCGAANATC 60
 TTCTCATCC TCATCATCGT CTTCTCATC CCGATCTCGG TCCAGGTCCC TCTCCCCCCC 120
 40 ACACAAGAGG TGGCGAAGGT CCAGCTGTAG TTCCTCTGGA CGTTCTCGAA GATGCTCTTC 180
 CTCTCTTCG TCATCATCTT CCTCTTCGTC TTCCTCATCC TCATCATCCA GTTCTCGAAG 240
 45 CCGCTCACGA ATCCCCATCC CCCC GCCGGA GRAAGTGACA GGAGGCGGCG GTACAGCTCT 300
 TATCGTTCAC ATGACCATTA CCAAAGGCAA AGAGTGCTAC AAAAGGAGCG TGCAATAGAA 360
 GAAAGAAGGG TGGTCTTCAT TGGAAAGATA CCTGGCCGCA TGACTCGATC AGAGCTGAAA 420
 50 CAGAGGTTCCT CCGTTTTTGG AGAGATGAG GAGTGACCA TCCACTTCCG TGTCCAAGGG 480
 GACAACTACG GCTTCGTAC TTATCGCTAT GCTGAGGAGG CATTTGCAGC CATTGAGAGT 540
 55 GGCCACAAGC TGCGGCAGGC AGATGAGCAG CCCTTTGATC TCTGCTTTGG GGGCCGAAGG 600
 SWGTNCTGCA AGAGGAGCTA TTCTGATCTT GACTCCAACC GGGAAGACTT TGACCCAGCA 660
 CCTGTAAAGA GCAAATTTGA TTCTCTTGAC TTTGACACAT TGTTGAAACA GGCCCAAG 720
 60

AACCTCAGGA GGTAACCTTG GGCCTTCCC TGCTATCCTT TTTCTCCTTT GGAGGTGCCC 780
 AACCTCCTCC ACCCCCTTCC CCTACTCTAG GGGAGAGAGC TGCTAGTGAG ATGACTGTTT 840
 - 5 TATAAAGAAA TGGAAAAAAG TGAATAAAA AATATGTTGA ATCAGATTTT TTAAGGGG 900
 TATTGTTTTT TTTATAACAG GTATTGAAAC AAGTTAACTT GCATTCTTAT GTAAGATAGG 960
 10 AGGGGCTGAG GGGATCCCCA GTGTTTGGAA CATAAGTCAC TATGCAGACT AATAAACATC 1020
 AACTAGAGAG NAAAAAAAAA AAAAAAAAAA ATTTAAAAAA CT 1062

15

(2) INFORMATION FOR SEQ ID NO: 109:

(i) SEQUENCE CHARACTERISTICS:

20 (A) LENGTH: 2539 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 109:

25

GAGAGACTCA CACTTCTTTT CCATTATCAC TGACGATGTA GTGGACATAG CAGGGGAAGA 60
 GCACCTACCT GTGTTGGTGA GGTGTTGTGA TGAATCTCAT AACCTAAGAG AGGAATTTAT 120
 30 AGGCTTCCTG CCTTATGAAG CCGATGCAGA AATTTTGGCT GTGAAATTTT AACTATGAT 180
 AACTGAGAAG TGGGGATTAA ATATGGAGTA TTGTCGTGGC CAGGCTTACA TTGWCTCTAG 240
 TGGATTTTCT TCCAAAATGA AAGTTGTTGC TTCTAGACTT TYAAGMKMRA TWKCCCMMAK 300
 35 YWAWCKGAAC AMAMKCTGSW CYTCCWSYGC SKTRMKRYC GYKSTATRRC WARWKSAYM 360
 CCYGKMTGS RRGTAWYTSK TGCAKAGGG AACAATTGAG GAAGTTTGTT CTTTTTTCCA 420
 40 TCGATCACCA CAACTGCTTT TAGAACTTGA CAACGTAATT TCTGTTCTTT TTCAGAACAG 480
 TAAAGAAAGG GGTAAAGAAC TGAAGGAAAT CTGCCATTCT CAGTGGACAG GCAGGCATGA 540
 TGCTTTTGAA ATTTTAGTGG AACTCCTGCA AGCACTTGTT TTATGTTTAG ATGGTATAAA 600
 45 TAGTGACACA AATATTAGAT GGAATAACTA TATAGCTGGC CGAGCATTTG TACTCTGAGT 660
 GCAGTGTGAG ATTTTGATTT CATGTTACT ATTGTTGTTT TTAATAATGT CCTATCTTTT 720
 50 ACAAGAGCCT TTGGGAAAAA CYCMAGGGG CAAACCTCTG ATGCTCTCTT TGCKKMSRT 780
 ARMTTTTGAY ATRMARYACT RMTKSAYTY AAYGRWGTGA CWSGAWAATA TTRAASTYTA 840
 TACAATKAAT YWTRRYTSM KRMAGMYAAT CCGAAAYTGT GGMAAMYAAA CTTGATATTC 900
 55 AAATGAAACT CCTGGGAAA TTCCGAGAG CTCACCAGG TAACCTGGAA TCTCAGCTAA 960
 CCTCTGAGAG TTAATAAAA GAAACCCTAA GTGTCCAAC AGTGGAGCAC ATTATTCAGG 1020
 60 AACTTAAAGA TATATTCTCA GAACAGCACC TCAAAGCTCT TAAATGCTTA TCTCTGGTAC 1080

	CCTCAGTCAT GGGACAAC TC AAATTC AATA CGTCGGAGGA ACACCATGCT GACATGTATA	1140
-5	GAAGTGACTT ACCCAATCCT GACACGCTGT CAGCTGAGCT TCATTGTTGG AGAATCAAAT	1200
	GGAAACACAG GGGGAAAGAT ATAGAGCTTC CGTCCACCAT CTATGAAGCC CTCCACCTGC	1260
	CTGACATCAA GTTTTTTCCT AATGTGTATG CATTCCTGAA GGTCTGTGT ATTCTTCCTG	1320
10	TGATGAAGGT TGAGAATGAG CGGTATGAAA ATGGACGAAA GCGTCTTAAA GCATATTTGA	1380
	GGAACACTTT GACAGACCAA AGGTCAAGTA ACTTGGCTTT GCTTAACATA AATTTTGATA	1440
15	TAAACACGA CCTGGATTTA ATGGTGGACA CATATATTAA ACTCTATACR AKTAMGTCAG	1500
	MGCTYYCTAC AKAYRAYTCM SWAWMTGTGG AAARYWSSTA MGMSWGCWKK TAMMRRTMCG	1560
	GMWWYYMYK RKTYGAYMYW YGCGWMCAG AAAAAGCCGT AAGGTGTATG TAGACCACTT	1620
20	AATCACTAAA TATCTTTGCC TATAGGACTC CATTTGAATAC ATTAGCCATT GATAATCTAC	1680
	CTGTTTAAAT GGCCCTGTT TGAAGTCTCA AGCTTTGAAG ACCTACCTGT TCTTCCAGAA	1740
25	GAGAACGTTG AAAGTGCCAT GTTTCCTTTT GCGTGATCTC TGTGTATGGC ACTCTGGAAT	1800
	TGTTTCCAGT TTAAKTCATT TTAGACATAG CATTTATTAT CACTGTGGAT CTCTACTTGT	1860
	TGGGTGTAT GAATTCCTTG AAGAATATAT TTTGAAGAGG TGTGGGAGGA AGGAATACAT	1920
30	TTTATAAAAT GTGTAGTGA AGCCACAAT TGACCTTKGA CTAATAGGAG TTTTAAGTAT	1980
	GTTAAAAATC TATACTGGAC AGTTACAAGA AATTACCGGA GAAAAGCTTG TGAGCTCACC	2040
35	AAACAAGGAT TTCAGTGTAG ATTTGTCTT TCTTGAAGCTT AAAGAAACAA ATGACAAAGT	2100
	TTGAATGGAA AAGCCTGCTG TTGTTCCACA TCTCGTTGCT GTTTACATTG CTTTGTGGAG	2160
	CCTACATCTT CTAAGCTTT TTAGCAGGTA TATGTTGAAC ACTTCTGTTT CATGGTTGAG	2220
40	ACAGAATCAG AGCCCATGGA TACTGACAAC TGATTTGTCT GTTTTTTTTC TCTGTCTTTT	2280
	TCCATGACTC TTATATACTG CCTCATCTTG ATTTATAAGC AAAACCTGGA AAACCTACAA	2340
45	AATAAGTGT GTGGTTTATC TAGAAAAATA TGGAAATAT TGCTGTTATT TTTGGTGAAG	2400
	AAAATCAATT TTGTATAGTT TATTTCAATC TAAATAAAAT GTGAATTTTG TIWWATTAAA	2460
	AATTWGGSAC AAABTBGHGG GGGDTCCAAA CHTWTCGHG KAAMTTCTCT WAARMATYTK	2520
50	ATAAACMSCT TCACAATTC	2539

55 (2) INFORMATION FOR SEQ ID NO: 110:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1751 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

60

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 110:

5	AGCATGAAGC CGATGGCCGT GGTGGCCAGT ACCGTCCTGG GCCTGGTGCA AACATGCGT	60
	GCGTTTGGCG GGATCCTGGT GGTGGTCTAC TACGTATTG CCATCATTTG GATCAACTTG	120
10	TTTAGAGGCG TCATTGTGGC TCTTCCTGGA AACAGCAGCC TGGCCCCGTC CAATGGCTCG	180
	GCGCCCTGTG GGAGCTTCGA GCAGCTGGAG TACTGGGCCA ACAACTTCGA TGACTTTGCG	240
	GCTGCCCTGG TCACTCTGTG GAACTTGATG GTGGTGAACA ACTGGCAGGT GTTTCTGGAT	300
15	GCATATCGGC GCTACTCAGG CCCGTGGTCC AAGATCTATT TTGTATTGTG GTGGCTGGTG	360
	TCGTCTGTCA TCTGGGTCAA CCTGTTTCTG GCCCTGATTC TGGAGAACTT CCTTCACAAG	420
20	TGGGACCCCC GCAGCCACCT GCAGCCCCCTT GCTGGGACCC CAGAGGCCAC CTACCAGATG	480
	ACTGTGGAGC TCCTGTTTCTG GGATATTCTG GAGGAGCCCC GGGAGGATGA GCTCACAGAG	540
	AGGCTGAGCC AGCACCCGCA CCTGTGGCTG TGCAGGTGAC GTCCGGGCTG CCATCCCAGC	600
25	AGGGGCGGCA GGAGAGAGAG GCTGGCCTAA CACAGGTGCC CATCATGGAA GAGGCGGCCA	660
	TGCTGTGGCC AGCCAGGCAG GAAGAGACCT TTCTCTGAC GGACCACTAA GCTGGGGACA	720
30	GGAACCAAGT CCTTTGCGTG TGGCCCAACA ACCATCTACA GAACAGCTGC TGGTGCTTCA	780
	GGGAGGCGCC GTGCCCTCCG CTTTCTTTTA TAGCTGCTTC AGTGAGAATT CCCTCGTCGA	840
	CTCCACAGGG ACCTTTTCTG CAAAAATGCA AGAAGCAGCG GCCTCCCCCTG TCCCCCTGCAG	900
35	CTTCGGTGGT GCCTTTTGCTG CCGGCAGCCC TTGGGGACCA CAGGCCCTGAC CAGGGCCTGC	960
	ACAGGTTAAC CGTGAGTCTG TCTCATCTAT TCACAGCTGG GAATGATACT AATACCTCCG	1020
40	ATTTTAGCCC AGCACCACAG GGTACGTTCC AGTTTTTCTC TCTTTCCATA GCTGTAAGGC	1080
	CCTTTCTGGG AATGGTTCTC ATTCTCTTTA ATCTATTATT GGGTCAGTTT TCCTGCATGT	1140
	CCCCAGCCTC CCATCACTGC CACCCACTCC CCACAGAGAT GCCCTGCTCA TCCGACTGGG	1200
45	GCTTTGACTC CCACACTGTG TACCCCTCTT GTGTGGACGC CCTGCTGCCA AAACCTTCAG	1260
	CAAACAGCTT TCCAAATGGA AGTTGTCACT GTCAGGCCTT TACAATCAGC AACAGCAAAA	1320
50	TCTACATGCT GCTGAGGGTC CTGCCTCATT AAGATGCAAT AAATATGTAA GTACATAAAA	1380
	ACAGCAATAG AAGAAACGTA ATGCTTTATT CTCAAATATG ATGTCTACAT AGAAAAGCCA	1440
	AAATTATTAA GAATAGTAAG AATTCACCCA GCACTTTGGG AGGCCGAGGC GGGTGGATCA	1500
55	TGAGGTCAGG AGATCGAGAC CATCTGGCT AACAGGGTGA AACCCCGTCT CTAATAAAAA	1560
	TACAAAAAAT TGGCCGGGCG CAGTGGCGGG CGCTGTGGT CCCAGCTACT GGGGAGGCTG	1620
60	AGGCAGGAGA ATGGCGTGAA CCCGGAAGC GGAGCTTGCA GTGAGCCGAG ATTGCGCCAC	1680

TGCAGTCCGC AGTCCAGCCT GGGCGACAGA GCGAGACTCC GTCTCAAAAA AAAAAAAAAA 1740
 AAAAAAAAAA A 1751

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(2) INFORMATION FOR SEQ ID NO: 111:

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- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1117 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 111:

AATGTTGTGG TGGTAGCATT TGGGTTAATT CTRATTATAG AGTCTCTTGG AGAGCAATGT 60
 20 CCATAAACTA ATCCCAAACA ACATTGTCTT TTTRATGTTG TAGTGAACAG CAGAGAATTT 120
 CAAAGGACCT TGCTAATATC TGTAAGACGG CAGCTACAGC AGGCATCAIT GGCTGGGTGT 180
 ATGGGGGAAT ACCAGCTTTT ATTCATGCTA AACAACAATA CATTGAGCAG AGCCAGGCAG 240
 25 AAATTTATCA TAACCGTTT GATGCTGTGC AATCTGCACA TCGTGCTGCC ACACGAGGCT 300
 TCATTCGTTA TGGCTGGCGC TGGGGTTGGA GAACTGCAGT GTTTGTGACT ATATTCAACA 360
 30 CAGTGAACAC TAGTCTGAAT GTATACCGAA ATAAAGATGC CTTAAGCCAT TTTGTAATTG 420
 CAGGAGCTGT CACGGGAAGT CTTTTTAGGA TAAACGTAGG CCTGCGTGGC CTGGTGGCTG 480
 GTGGCATAAT TGGAGCCTTG CTGGGCACTC CTGTAGGAGG CCTGCTGATG GCATTTCAGA 540
 35 AGTACTCTGG TGAGACTGTT CAGGAAAGAA AACAGAAGGA TCGAAAGGCA CTCCATGAGC 600
 TAAAACTGGA AGAGTGGAAA GGCAGACTAC AAGTTACTGA GCACCTCCCT GAGAAAATTG 660
 40 AAAGTAGTTT ACAGGAAGAT GAACCTGAGA ATGATGCTAA GAAAATTGAA GCACTGCTAA 720
 ACCTTCCTAG AAACCTTCA GTAATAGATA AACAAGACAA GGAAGTAAAG TGCTCTGAAC 780
 TTGAAACTCA CTGGAGAGCT GAAGGGAGCT GCCATGTCCG ATGAATGCCA ACAGACAGGC 840
 45 CACTCTTTGG TCAGCCTGCT GACAAATTTA AGTGCTGGTA CCTGTGGTGG CAGTGCTTG 900
 CTCTTGCTTT TTTCTTTTCT TTTTAACTAA GAATGGGGCT GTTGTACTCT CACTTTACTT 960
 50 ATCCTTAAAT TTAAATACAT ACTTATGTTT GTATTAACTT ATCAATATAT GCATACATGA 1020
 ATATATCCAC CCACCTAGAT TTAAAGCAGT AAATAAAACA TTTCGCAAAA GATTAAAGTT 1080
 GAATTTTACA GTTAAAAAAA AAAAAAAAAA AAAAAA 1117

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(2) INFORMATION FOR SEQ ID NO: 112:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1313 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 112:

GGCAGAGGTT TTCITTATATT TTAAGTAAAT TTAAAGTGGC TATCAGAATA TTTATTCTTG 60
TTTGAGACTA CCAACATAAC TACGTGTTGA AGGTGCTTCA CAGAGAATAT ATTGCCCTTTA 120
ATGTGAAATA ATTTTCACCA ATGTTGCTAA CTTTAATAAA GTATAAAATT TGTAGAATAT 180
TCAGTTAAGT AGTTGGTAAC CCTTTTCTAT TTTAGTAAAA CTTAATGCAT GTTTACTTTT 240
TTTGTAAAGA TGCAGACAAT CTCCTTGAAC ATGAATTGGG GGCTCTCAAT ATGGCTGCAT 300
TACTACGAAA AGAAGAAAGA GCAAGTCTTC TTAGTAATCT TGGCCCATGT TGTAAGGCGT 360
TGTGCTTCAG ACGGGATTCT GCAATTGCAA AGCAGCTTGT TAAAAATGAG AAGGGCACCA 420
TAAACAAGC TTACACGAGT GCTCCAATGG TAGACAATGA ATTACTTCGA TTGAGTCTTC 480
GGTTATTTAA GCGGAAGACT ACTTGCCATG CTCCAGGACA TGAAAAGACT GAAGATAATA 540
AACTTTCACA GTCCAGTATC CAACAGGAAC TGTGTGTGTC TTAAGACCGA AGTTACAATA 600
TGGTATTTT GGTACTGTCT TCCTTCAGCA GTGCATATTC TTTTGCAAAG TTCTTTGGTT 660
TGACAAGCAT TAGTGACAAA GGCAGAAAAG ATTTATCAGC CATGCTAAAA GAGTGAAGAA 720
TTTGTATCTT TAGAGACACT AGTTTGGGCC AACTTAAGAT TTTACGTTAA TTTTACATA 780
GTATTTGACA CTCATGCAAA ATAATGTGAA AACATCTAGA TTTAGTAGTT TATTC TGCGC 840
CTTTTGTTAA AACTGAAGAT TTTGGAAAAT GGTGTGCACT GCTCTCCAG CCTATGAATA 900
TTTTGTGAA ATGGAACCAT GGATTTATGT CTGGATCATC CATAAGAAC CAACAATTTT 960
ATTCAAAAAC AATGTGTCA TCAAAGTAAT TGCTCACATT GTGCAGTACT ATGTTGTACA 1020
GACCACGTGA AAGGAATGC TGGTCTAGCT GCGTGGTAT GTTTATAGGC GAATTCAGC 1080
AGAAGGAAGC CAAAATAGTT TTTTCTTTT GAAAGTTTTT TAAAAATTAT TTCATGGGTC 1140
TTTTTTTTAA TTAATATGTG TGCATTGTTA CAATGTATGT TGGGATGTCT TTTGACCCTA 1200
AATGCTTTTT TTGTTATCAG AGATTGTGTA CTATTTTTAT TTTTAATAAA TGTATCTTCC 1260
CTTTTMAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAA 1313

55

(2) INFORMATION FOR SEQ ID NO: 113:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1654 base pairs

(B) TYPE: nucleic acid

60

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 113:

-5	ACAGGGACAG AATACTTTCT TTCCTTCCTT CAAGTACAAG AAGGCTTTCT CTACCATTTG	60
	CGTCTACACT TTATTTTAAA AGCTATCCTT TTCTAGTAGT ATTTTATCAT GGCAATGGCA	120
10	TGATGACAAC AACAGTCTTT CATTACAGAC TGAAGGGAAG CATGTCCTTA CTTAAAATAG	180
	TTCTGCTACT TTCCCTCCTA TTATAAGGAA ATTTTACAGA TTCTAAAAAT ACCTTAATTT	240
15	TTCTTTGATT TTTATTTTAC CAAGTCACAA ATGTCCTTTT GATGTTTGA GAATTGTTCT	300
	CATAGAATCA CAAATACTGA CATTTCATTA GATGATTATT TTCCTAGAAT CCCCAAAGAG	360
	CAGTGGCAGT CCATGGCTTG GTGAAGCTA GAAATTTTCC TGCCCCCTGGT GACCTGGTAA	420
20	GCCTCCTGCT CGGAACCGTG TGAGTGGGTG AGGAAGATGA GAGATGGTCA GATGGAAGAG	480
	AGRAATACAT GAACTGCTCT GCCTCTCTG GTTCTGTCTT TGGCCCAGAG TTTTGTAAAA	540
25	GCACGGGANA TNGACTGACT TCACATGCTC AGCTTTCTCA GCCTTTTGTT TATTTTGTG	600
	TCCTTAGATT TCCCTGTGT AAAAGGGGCA AGAAAAGTAA CTCATCATCT CTAACACACC	660
	ATGGCAGCTT AGCCAGGTAG TCTTAGTGGT GGTGTTTAGG CATAAGATAT GCTGATCATC	720
30	AGTCTCAGGC CACAGTTTCC TTCACTAATC GTCCAGCTTG AGTGTCTGT TCTCTCCTG	780
	CCCATTTCTT TGAACCTCCT GCTCTAGCCT TGGCGGAGGG AGAGTGCTAT TTGCTTTGT	840
35	TCTCCCTCTG TCTTAGGAAA AGCCATCTTT AATATAGTTC TTCACCACTG TTGGGGTTGT	900
	TTTGTGATTT TTTTTCCTT CCGAAGAACT CCTGGTTGTT ATTGGATTTT GTATTTTAAT	960
	ACAAATTATT GAATTTTATA AGCTTGTACA CAATATTTAA TTAGTGIGAA AGGAAACAAA	1020
40	GAATGCAGGA AAAATAATTT AATATCAACC TCAGTTGACA AGGTGCTCAG ATTATTCAAT	1080
	TCGGGATCCT CCTTTTGTTA GGTTTTGTAG ACAACCCTAG ACCTAACTG TGTACAGAC	1140
45	TTCTGAATGT TTAGGCAGTG CTAGTAATTT CCTCGTAATG ATTCTGTTAT TACTTTCCTA	1200
	TTCTTTATTC CTCTTCTTC TGAAGATTAA TGAAGTTGAA AATTGAGGTG GATAAATACA	1260
	AAAAGGTAGT GTGATAGTAT AAGTATCTAA GTGCAGATGA AAGTGTTGTA TATACATCCA	1320
50	TTCAAAATTA TGCAAGTTAG TAATTACTCA GGGTTAACTA AATTACTTTA ATATGCTGTT	1380
	GAAYCTACTC GTTTCCTTGG CTAGAAAAAA TTATAAACAG GACTTTGTAG TTTGGGAAGC	1440
55	CAAATTGATA ATATTCTATG TTCTAAAAGT TGGGCTATAC ATAAATTATT AAGAAATATG	1500
	GATTTTTATT CCCAGGATAT GGTGTTTATT TTATGATATT ACGCAGGATG ATGTATTGAG	1560
	TAAATCAGT TTTGTAAATA TGTAAATATG TCATAAATAA ACAATGCTTT GACTTATTTT	1620
60	CAAAAAAAA AAAAAATAAA NTTCGAGGGG GGGC	1654

-5 (2) INFORMATION FOR SEQ ID NO: 114:

(i) SEQUENCE CHARACTERISTICS:

10 (A) LENGTH: 1171 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 114:

15 GGCAAACTTT CCCCCAANGC TTCGAAACTT GCAAGCCGAA ACCTTGAATC GTTAAAAGTT 60
GGGTTCGCNC GCGCCCTGG CCCGAAGAAG CGCAATTGGC GTTCCGCGAA CGTTGGCCCT 120
CAACGGCTCG GCAGCCAGCC ATGTCCTGCA CCCAGGACAG CGGCCCTGGG CTACAAGGAC 180
20 CTGCMCCTCA TCTTCCTGCG CCGACCTGCG CGGGTAAGG GSWAGTTTCA GACTGTGAAG 240
GACGTCGTGC TGGACTGCCT GTTGGACTTC TTACCCGAGG GGTGAACAA AGAGAAGATC 300
25 ACACCACTCA CGCTCAAGGA AGCTTATGTG CAGAAAATGG TTAAAGTGTG CAATGACTCT 360
GACCGATGGA GTCTTATATC CCTGTCAAAC AACAGTGGCA AAAATGTGGA ACTGAAATTT 420
GTGGATTCCC TCCGAGGCA GTTTGAATTC AGTGTAGATT CTTTTCAAAT CAAATTAGAC 480
30 TCTCTTCTGC TCTTTTATGA ATGTTTCAGAG AACCCAATGA CTGAGACATT TCACCCCA 540
ATAATCGGGG AGAGCGTCTA TGGCGATTTT CAGGAAGCCT TTGATCACCT TTGTAACAAG 600
35 ATCATTGCCA CCAGGAACCC AGAGGAAATC CGAGGGGGAG GCCTGCTTAA GACTTGCAAC 660
CTCTTGGTGA GGGGCTTTAG GCCCGCCTCT GATGAAATCA AGACCCCTCA AAGGTATATG 720
TGTTCCAGGT TTTTCATCGA CTTCCTCAGAC ATTGGAGAGC AGCAGAGAAA ACTGGAGTCC 780
40 TATTTGCAGA ACCACTTTGT GGAATTGGA AGACCGCAAG TATGAGTATC TCATGACCCCT 840
TCATGGAGTG GTAAATGAGA GCACAGTGTG CCTGATGGGA CATGAAAGAA GACAGACTTT 900
45 AAACCTTATC ACCATGCTGG CTATCCGGGT GTTAGCTGAC CAAAATGTCA TTCCTAATGT 960
GGCTAATGTC ACTTGCTATT ACCAGCCAGC CCCCTATGTA GCAGATGCCA ACTTTAGCAA 1020
TTACTACATT GCACAGGTTT AGCCAGTATT CACGTGCCAG CAACAGACCT ACTCCACTTG 1080
50 GCTACCCCTGC AATTAAGAAT CATTTAAAAA TGTCTGTGG GGAAGCCATT TCAGACAAGA 1140
CAGGAGAGAA AAAAAAAAAA AAAAAAAAAA A 1171

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(2) INFORMATION FOR SEQ ID NO: 115:

60 (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 842 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

-5

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 115:

	GGTCTGCGCC GGAAGTGCAT GAGCTGCCGA TGTGGTGTCTT AGTGATTGCG GTTTCGGTCC	60
10	CTCTCCCGTG TTTCCCGGGC TGGGTATTTC CCTCGCACCA TGGCGCCCAA GGGCAAAGTG	120
	GGCACGAGAG GGAAGAAGCA GATATTTGAA GAGAACAGAG AGACTCTGAA GTTCTACCTG	180
	CGGATCATAC TGGGGGCCAA TGCCATTTAC TGCTTGTGA CGTTGGTCTT CTTTTACTCA	240
15	TCTGCCTCAT TTTGGGCCTG GTTGGCCCTG GGCTTTAGTC TGGCAGTGA TGGGGCCAGC	300
	TACCACTCTA TGAGCTCGAT GGCACGAGCA GCGTTCCTG AGGATGGGGC CTTGATGGAT	360
20	GGTGGCATGG ACCTCAACAT GGAGCAGGGC ATGGCAGAGC ACCTTAAGGA TGTGATCCTA	420
	CTGACAGCCA TCGTGCAGGT GCTCAGCTGC TTCTCTCTCT ATGCTCTGGTC CTTCCTGGCTT	480
	CTGGCTCCAG GCCGGGCCCT TTACCTCCTG TGGGTGAATG TGCTGGGCCC CTGGTTCACT	540
25	GCAGACAGTG GCACCCAGC ACCAGAGCAC AATGAGAAAC GGCAGCGCCG ACAGGAGCGG	600
	CGGCAGATGA AGCGTTATA GCCATTGACA TTGTGGCCAC AGGCCACTGG CCCTGGGTGG	660
30	CTCTGTCAGG GTGCACAGCC CCTCATGCCT GGAGCAATGA GGTCTAGTC CAGGGGCCAA	720
	AAGCAGTCTG AGGTATTGGG TATACTTATA CTCTATAGGG TCGTTGAATA AATGGCTTAG	780
	AATGTGAAAA AAAAAAAAAA AAAAACTCG AGGGGGGCC GGTACCCAAT TTCNCCTANA	840
35	AT	842

40

(2) INFORMATION FOR SEQ ID NO: 116:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1640 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 116:

50

	GGCACGAGGC GCGGCAGCG GTGGCGGCGG CGCCCCCGG CGGGAGCCGT TCCCTTTCCC	60
	GTCGGGGAGC GCGGGGYCGG GCGCCAGGGG ACCCCGGGCC ACGGAGAGCG GGAAGAGGAT	120
55	GGATTGCCCG GCCCTCCCCC CCGGATGGAA GAAGGAGGAA GTGATCCGAA AATCTGGGCT	180
	AAGTGCTGGC AAGAGCGATG TCTACTACTT CAGTCCAAGT GGAAGAAGT TCAGAAGCAA	240
60	GCCTCAGTTG GCAAGGTACC TGGGAAATAC TGTGTATCTC AGCAGTTTTC ACTTCAGAAC	300

	TGGAAAGATG ATGCCTAGTA AATTACAGAA GAACAAACAG AGACTGCGAA ACGATCCTCT	360
	CAATCAAAAT AAGGGTAAAC CAGACTTGAA ATACAACATT GCCAATTAGA CAAACAGCAT	420
- 5	CAATTTTCAA ACAACCGGTA ACCCAAAGTC ACAAATCATC CTAGTAATAA AGTGAAATCA	480
	GACCCACAAC GAATGAATGA ACAGCCACGT CAGCTTTTCT GGGAGAAGAG GCTACAAGGA	540
10	CTTTAGTGCA TCAGATGTAA CAGAACAAAT TATAAAAACC ATGGAACCTAC CCAAAGGTCT	600
	TCAAGGAGTT GGTCCAGTAG CAATGATGAG ACCCTTTTAT CTGCTGTTGC CAGTGCTTTG	660
	CACACAAGCT CTGCGCCAAT CACAGGGCAA GTCTCCGCTG CTGTGGAAAA GAACCTGCTG	720
15	TTTGGCTTAA CACATCTCAA CCCCTCTGCA AAGCTTTTAT TGTACAGAT GAAGACTCAG	780
	GAAACAGAAG AGCGAGTACA GCAAGTACGC AAGAAATTGG AAGAAGCACT GATGGCAGAC	840
20	ATCTTGTCGC GAGCTGCTGA TACAGAAGAG ATGGATATTG AAATGGACAG TGGAGATGAA	900
	GCCTAAGAAT ATGATCAGGT AACTTTTCGAC CGACTTTCCC CAAGAGAAAA TTCCTAGGAA	960
	ATTGAACAAA AATGTTTCCA CTGGCTTTTG CCTGTAAGAA AAAAAATGTA CCCGAGCACA	1020
25	TAGAGCTTTT TAATAGCACT AACCAATGCC TTTTITAGATG TATTTTIGAT GTATATATCT	1080
	ATTATTCAAA AAATCATGTT TATTTTGAGT CCTAGGACTT AAAATTAGTC TTTTGTAATA	1140
30	TCAAGCAGGA CCCTAAGATG AAGCTGAGCT TTTGATGCCA GGTGCAATCT ACTGGAAATG	1200
	TAGCACTTAC GTAAAACATT TGTTTCCCCC ACAGTTTTAA TAAGAACAGA TCAGGAATTC	1260
	TAAATAAAAT TCCCAGTTAA AGATTATTGT GACTTCACTG TATATAAACA TATTTTATA	1320
35	CTTTATTGAA AGGGGACACC TGTACATTCT TCCATCGTCA CTGTAAAGAC AAATAAATGA	1380
	TTATATTCCA CAGAAAAAAA AAAAAAAAW MWSTYGARRR GSRGCMCRSW AYMMARWWCC	1440
40	CCWMRTWRGS MKTCSTMIKA YTTACATTCA ACTCTGATCC CGGGGCCCTA GGTTTGACAT	1500
	GGGAGGTGGG AGGAAGATAG CGCATATATT TGCAGTATGA ACTATTGCCT CTGGGACGTT	1560
	GTGAGGAATT GTGCTTTCAC CAGAAATTCT AAGGATTCTT GGCTTAAATA TCACCTAGCC	1620
45	TGTGGTAATT TTTTTCCT	1640

50 (2) INFORMATION FOR SEQ ID NO: 117:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 952 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 117:

60 TGAATTTAGN AAACACTTTG GAAAACTCAT AACCTCATCA GAAACTGCCT TTAGCCACAC 60

TCCTGACCTT CTAGATGAGT AACAAAAAAA TGAAATAAGT TCTTGGAAT TAAGCCATTT 120
 ATTTTAATTT GCTATTTTTC TCAATGTTCT AGGTATCTTT AAATTGTTA TTGTGGAATC 180
 -5 ATTTTCCTGC CAGATACCTT TATCAAAATT ATTGGCCTCA TGAGAGCTGA AGTAAGTCAG 240
 CTTTTTGGTG AACTTTAGTG GACTTCTGTG AGATTGTAGT TGTACTTTGT ATCTCTAAAT 300
 10 CTAAAGATAG TTTTTTAAAA CTCCCAAAGA AAATCTGCTC TCCTTTCTGA TCTAAAACT 360
 CATCTTTGGG GTAAAGAGTT AAGTGTCCAA AGGTGTGCAC AGTTCATGAG GTCAGAGGGA 420
 GCTAGCCTGG CACCTGGACT CTGCCCATCC ACAGCTGACA GATTCCAACA GAAGTGTATT 480
 15 TAAATCTCC AGTAGACAAT GCTGGGTAAG GGAGGGGTA GGGCTGGGTT ATTAAGATAC 540
 AGGCTGCTGT ATTTTACATT GGTGTGGGG GAAGGGGAGC CTGGAGAAAA CAAAGTCACT 600
 20 ATTCCTTTT TTGAAACAGG AAAAAAATT ATTTTGTGT CAGTAAAAAT GGTAGAGAAT 660
 TCCAATGTCC CTAGCCACAA GGGACCAGTT CCACTGAGAA GTGAACAGTG GGAACCAAA 720
 ATTTTCAGAAA CATTGGGGGA AGGGAAAATT GGCTTTCTCT TAATTGGCAG ATGTTCCAGT 780
 25 GGGGSGGGG GGCTCTGTTT TTGTTGGGAT GTGTTATGTT GTATGTACGC ATATATGGAC 840
 CGGAGTCTGC TGAGTTTATA AGGTTCCAAA AATATGGTAA AATCTTGGTT TTTGTTAATT 900
 30 TATCTCAATA AAAGCCCACT GGRACCTCAA AAAAAAAGA AAAAAAGA NN 952

35 (2) INFORMATION FOR SEQ ID NO: 118:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1256 base pairs
 (B) TYPE: nucleic acid
 40 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 118:

45 GACGTCATAG GTAAACAGGC TCTGTATCCG TGGCAGCGGC CGTGGCAGGC TGGCTGGGTA 60
 CCGGCTGTGC CTGACCCAGG AGAAGCTGCC TGTCTACATC AGCCTGGGCT GCAGCGCGCT 120
 GCCGCCGCGG GGCCGGCAGC TGAACATATG TCTCTCAGG GCGGGCACCG TGTTCATTC 180
 50 ATCTTTGTAC CCCCAGCATC TAGCAGTGTG GGCATGTAGT AGGCACTCAA GAAATGTGTG 240
 TTGAATGAAC GATGCCTGTG ACAAGCAAGC GGACTTTATT CTTTCCTGAC CCTTGCTCCT 300
 55 ATGACACACC TCCTCTGAC TGCCACTGTC ACTCCTTCAG AGCAGAACTC CTCTAGGGAA 360
 CCTGGATGGG AACAGCCAT GGCCAAGGAC ATCCTGGGTG AAGCAGGGCT ACACTTTGAT 420
 60 GAACTGAACA AGCTGAGGGT GTTGGACCCA GAGGTTACCC AGCAGACCAT AGAGCTGAAG 480

GAAGAGTGCA AAGACTTTGT GGACAAAATT GGCCAGTTTC AGAAAATAGT TGGTGGTTTA 540
 ATTGAGCTTG TTGATCAACT TGCAAAAGAA GCAGAAAATG AAAAGATGAA GGCCATCGGT 600
 5 GCTCGGAAGT TGCTCAAATC TATAGCAAAG CAGAGAGAAG CTCAACAGCA GCAACTTCAA 660
 GCCCTAATAG CAGAAAAGAA AATGCAGCTA GAAAGGTATC GGGTTGAATA TGAAGCTTTG 720
 TGTAAAGTAG AAGCAGAACA AAATGAATTT ATTGACCAAT TTATTTTTC AATGAACT 780
 10 GAAAATTTTC CTTTTATAGT AGGAAGGCAA AACAAAAAA AGCCTCTCAA AACCAAAAA 840
 ACCTCTGTAG CATTCAGCG GCTTGACCAA TGACCTATGT CACAAGAGGT GCGGTGTAAG 900
 15 GAATGCAGCC CCTGAAGAC AGCACTACAA GTCTGGGGGA GCCAGTTTAA ACATCAGTC 960
 ACAGCTGCTG CTGGTGGCCC TGCACTGTAC GTCTCACCT CTTATGCTTA GTTGGAATA 1020
 AGCAGTTTGT AAACCTTTCAT CCTTTTTTT GTAAATTCAC AAAGCTTTGG AAGGAGAAGC 1080
 20 AATAAATTTT TGTTTTCAA TGGCTTGATG TACCTTTTTT CTGTTGCTC TTGAAATATG 1140
 TTTAACTCCT CATGAGAGAA CCTGGATTC TCTATCCCCT AGTCCACAAA ACAAAACCAGG 1200
 25 CAGTGGTCAG CAGCTACCTT TNATTTGGAT CACACACGTG AGTCAGACAG TACCAC 1256

30 (2) INFORMATION FOR SEQ ID NO: 119:

(i) SEQUENCE CHARACTERISTICS:

35 (A) LENGTH: 1143 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 119:

40 GGCCGTAGCA GCCGGGCTGG TCCTGCTGCG AGCCGGCGGC CCGGAGTGGG GCGGCGGCAT 60
 GTACCTTCCA CATTGAGTAT TCAGAAAGAA GTGATCTGAA CTCTGACCAT TCTTTATGGA 120
 TACATTAAGT CAAATATAAG AGTCTGACTA CTTGACACAC TGGCTCGAGC AAACATGAAC 180
 45 GTTGAGTTG CCCACAGTGA AGTGAATCCA AATACCCGTG TCATGAACAG CCGGGGTATG 240
 TGGCTGACAT ATGCATGCG AGTTGGCTTG CTTTATATTG TCTTACTCAG CATTCCTTTC 300
 50 TTCAGTGTTC CTGTTGCTTG GACTTTAACA AATAATTATAC ATAATCTGGG GATGTACGTA 360
 TTTTTCATG CAGTGAAAGG AACACCTTTC GAAACTCCTG ACCAGGGTAA AGCAAGGCTC 420
 CTAATCATT GGAACAACCT GGACTATGGA GTACAGTTTA CATCTTCACG GAAGTTTTTC 480
 55 ACAATTTCTC CAATAATTCT ATATTTTCTG GCAAGTTTCT ATACGAAGTA TGATCCAAC 540
 CACTTCATCC TAAACACAGC TTCTCTCCTG AGTGTACTAA TTCCCAAAAT GCCACAAC 600
 60 CATGGTGTTC GGATCTTTGG AATTAATAAG TATTGAAATG TTTTGAACT GAAAAAAAT 660

TTTACAGCTA CTGAATTTCT TATAAGGAAG GAGTGGTTAG TAAACTGCAC TGTTTCTSTG 720
 ATAATGTGAA ATGAGAAGTA TTTACATTTG AGGGCCAATG GCTGGTCCTT CAAGTGCTGT 780
 -5 TTTGAAGTGC AGATTTCCAT TAAATGATGC CTCTGTTTAA TACACCTGGT ACATTTCTGA 840
 AGAGGGGCTT TATAAGCAGG CTGGGCAGGC CCAGCTTATA AGTTAAAGGG CATCACAGTG 900
 10 AGGGTGTAGT AGATAAATTC AAGGAAATAA GAGATTTGTA AGAACTAGG ACCAGCTTAA 960
 CTTATAATGA ATGGGCATTG TGTTAAGAAA AGAACATTTT CAGTCATTCA GCTGTGGTTA 1020
 TTTAAAGCAG ACTTACATGT AAACCGGAAT CCTCTCTATA CAAGTTTATT AAAGATTATT 1080
 15 TTTATTACCG TAAAAAANA AAAAAAANA AAAAAAANA AAAAAAANA AAAAAAANA 1140
 GAN 1143

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(2) INFORMATION FOR SEQ ID NO: 120:

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- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1782 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

30

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 120:

CAGGCCCCGG CCCCCACCC ACGTCTGCGT TGCTGCCCCG CCTGGGCGCG GCCCCAAAGG 60
 35 CAAGGACAAA GCAGCTGTCA GGAACCTCC GCCGGAGTCG AATTTCAGTG CAGCTGCCGG 120
 CAACCACAGG TTCCAAGATG GTTTGCGGGG GCTTCGCGTG TTCCAAGAAC TGCTGTGCG 180
 CCCTCAACCT GCTTTACACC TTGGTTAGTC TGCTGCTAAT TGGAATTGCT GCGTGGGGCA 240
 40 TTGGCTTCGG GCTGATTTC AGTCTCCGAG TGGTCGCGT GGTCAATGCA GTGGGCATCT 300
 TCTGTTCCTT GATTGCTTTA GTGGGTCTGA TTGGAGCTGT AAAACATCAT CAGGTGTTGC 360
 45 TATTTTTTTA TATGATTATT CTGTTACTTG TATTTATGT TCAGTTTCT GTATCTTGCG 420
 CTTGTTTACG CCTGAACCAG GAGCAACAGG GTCAGCTTCT GGAGGTGGT TGAACAATA 480
 CGCAAGTGC TCGAAATGAC ATCCAGAGAA ATCTAACTG CTGTGGGTTC CGAAGTGTTA 540
 50 ACCCAATGA CACCTGTCTG GCTAGCTGTG TTAAGGTGA CCACTCGTGC TCGCCATGTG 600
 CTCCAATCAT AGGAGAATAT GCTGGAGAGG TTTTGAGATT TGTGGTGGC ATTGGCCTGT 660
 55 TCTTCAGTTT TACAGAGATC CTGGGTGTTT GGCTGACCTA CAGATACAGG AACCAGAAAG 720
 ACCCCGCGC RAATCCTAGT GCATTCTTTT GATGAGAAAA CAAGGAAGAT TTCCTTTCGT 780
 ATTATGATCT TGTTCACTTT CTGTAATTTT CTGTTAAGCT CCATTTGCCA GTTTAAGGAA 840
 60

	GGAAACACTA TCTGGAAG TACCTTATG ATAGTGAAT TATATATTTT TACTCTATGT	900
	TTCTCTACAT GTTTTTTCT TTCCGTTGCT GAAAAATATT TGAAACTTGT GGTCTCTGAA	960
-5	GCTCGGTGGC ACCTGGGAAT TTACTGTATT CATGTGCGG CACTGTCCAC TGTGGCCTTT	1020
	CTTAGCATTT TTACCTGCAG AAAAAGTTG TATGGTACCA CTGTGTGGT TATATGGTGA	1080
10	ATCTGAACGT ACATCTCACT GGTATAATTA TATGTAGCAC TGTGCTGTGT AGATAGTTCC	1140
	TACTGGAAAA AGAGTGGRAA TTTATTAAAA TCAGAAAGTA TGAGATCCTG TTATGTTAAG	1200
	GGAAATCCAA ATTCCCAATT TTTTTTGGTC TTTTAGGAA AGATGTGTG TGGTAAAAAG	1260
15	TGTAGTATA AAAATGATAA TTWACTKGTA GTCTTTTATG ATWACACCAA TGTATTCTAG	1320
	AAATAGTTAT GYCYTAGGAA ATTGTGGTTT AATTTTGTAC TTTTACAGGT AAGTGCAAAG	1380
20	GAGAAGTGGT TTCATGAAAT GTTCTAATGT ATAATAACAT TTACCTTCAG CCTCCATCAG	1440
	AATGGAACGA GTTTTGAGTA ATCAGGAAGT ATATCTATAT GATCTTGATA TTGTTTTATA	1500
	ATAATTGAA GTCTAAAAGA CTGCATTTTT AAACAAGTTA GTATTAATGC GTTGGCCAC	1560
25	GTAGCAAAAA GATATTTGAT TATCTTAAAA ATTGTTAAAT ACCGTTTCA TGAAAGTTCT	1620
	CAGTATTGTA ACAGCAACTT GTYAAACCTA AGCATATTTG AATATGATCT CCCATAATTT	1680
30	GAAATTGAAA TCGTATTGTG TGGCTCTGTA TATCTGTTA AAAAATTAAA GGACAGAAAC	1740
	CTTCTTTGT GTATGCATGT TTGAATTAAA AGAAAGTAAT GG	1782

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(2) INFORMATION FOR SEQ ID NO: 121:

(i) SEQUENCE CHARACTERISTICS:

40

- (A) LENGTH: 610 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 121:

45

	GTGGCTGCA GATTGTGGT GCGTCTGAG CCGTCTGCC TGCGCCAAGA TGCTTCAAAG	60
	TATTATTAAA AACATATGGA TCCCATGAA GCCCTACTAC ACCAAAGTTT ACCAGGAGAT	120
50	TTGGATAGGA ATGGGGCTGA TGGGCTTCAT CGTTTATAAA ATCGGGCTG CTGATAAAAG	180
	AAGTAAGGCT TTGAAAGCTT CAGCGCCTGC TCCTGGTCAT CACAACCAGA TTTACTTGGA	240
55	GTACATGTGA AAGAAAACGT CAGTCTGCCT GTAAATTTCA GCAAGCCGTG TTAGATGGGG	300
	AGCGTGGAAC GTCAGTGTAC ACTTGTATAA GTACCGTTTA CTTTCATGGCA TGAATAAATG	360
	GATCTGTGAG ATGCACTGCT ACCTGGTACT GCTTTCAGTG TGTCCCCCT CAGCCCTCCG	420
60	GCGTGTGAG CATACTCTGA GTAGATAATT TGTATGCAG CGCATGCAAT CAGAATCTCA	480

CTGAGCCACC CATCATTGTG AAATAATTAC CTCAGTTGTA CAGGACTTGG TGATCAGGAT 540
5 CCAGGCACTC ACTTGTATTTC TACTGCTCAA TAAACGTTTA TTAAACTTGA AAAAAAAAAA 600
AAAAAAAAAA 610

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(2) INFORMATION FOR SEQ ID NO: 122:

(i) SEQUENCE CHARACTERISTICS:

15

- (A) LENGTH: 526 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 122:

20

GGTACGCCTG CAGGTACCGG TCCGGAATTTC CGGGTCGCCC ACGCGTCNGG CCACGCGTCC 60
ACCCACGCGT CCGSCCAGCG GTCGGAGCCG AGCCGGACTG GTCAGGATGA TCACGGACGT 120
25 GCAGCTCGCC ATCTTCGCCA ACATGCTGGG CGTGTCGCTC TTCTTGCTTG TCGTTCTCTA 180
TCACTACGTG GCCGTCAACA ATCCCAAGAA GCAGGAATGA AAGTGCGGCT TTCTCCGCCC 240
CAGGGTTCCA GGACATAGTC TGAGGCAAGA TGGAGGGTAT GAGGGGCCTT CACACTTCAC 300
30 TTCATCCCTT CTACCCATCA CAACATACAA AGCAACTACA CCTGGATTTT TCCAAACAAC 360
TTTTATTTC TCAGAGTCTT CCTTAATCCT ATGGAACAAG AAGCTGCCAC TGAATAGGGC 420
35 CCAGTATAGG GGCTTGCTTT TCTACTCCCT CCCCCAATA TAAAAATATA GACTTTTTAA 480
AAAAAAAAAA AAAAANTTCG NGGGGGGSCC GGTACCCATC CCCCTA 526

40

(2) INFORMATION FOR SEQ ID NO: 123:

(i) SEQUENCE CHARACTERISTICS:

45

- (A) LENGTH: 2081 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

50

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 123:

TGTACCGGTC CGGAAATTCC CGGGTCGACC CACGTCGTCS GGGGAACATG GCGGCTKCGG 60
AGCCGGCGGT CCTTGCGCTC CCCAACAGCG GCGCCGGGGG CGCGGGGGCG CCGTCGGGCA 120
55 CAGTCCCGGT GCTCTTCTGT TTCTCAGTCT TCGCGCGACC CTCGTGGGTG CCACACGGGG 180
CGGGCTACGA GCTGCTCATC CAGAAGTCC TCAGCCTGTA CGGCGACCAG ATCGACATGC 240
60 ACCGCAAATT CGTGGTGCAG CTGTTGCGCG AGGAGTGGGG CCAGTACGTG GACTTGCCCA 300

	AGGGCTTCGC GGTRAGCGAG CGCTGCAAGG TGCGCCTCGT GCCGYTGCAG ATCCAGCTCA	360
	CTACCOCTGGG AAATCTTACA CCTTCAAGCA CTGTGTTTTT CTGCTGTGAT ATGCAGGAAA	420
5	GGTTCAGACC AGCCATCAAG TATTTTGGGG ATATTATTAG CGTGGGACAG AGATTGTTGC	480
	AAGGGGCCCG GATTTTAGGA ATTCTGTTA TTGTAACAGA ACAATACCCT AAAGGTCTTG	540
10	GGAGCACGGT TCAAGAAATT GATTTAACAG GTGTAAACT GGTACTTCCA AAGACCAAGT	600
	TTTCAATGGT ATTACCAGAA GTAGAAGCGG CATTAGCAGA GATTCCCGGA GTCAGGAGTG	660
	TTGTATTATT TGGAGTAGAA ACTCATGTGT GCATCCAACA AACTGCCCTG GAGCTAGTTG	720
15	CCCGAGGAGT CGAGGTTTAC ATTGTTGCTG ATGCCACCTC ATCAAGAAGC ATGATGGACA	780
	GGATGTTTGC CCTCGAGCGT CTCGCTCRAR CCGGGATCAT AGTGACCACG AGTGAGGCTG	840
20	TTCTGCTTCA GCTGGTAGCT GATAAGGACC ATCCAAAATT CAAGGAAATT CAGAATCTAA	900
	TTAAGCGCAG TGCTCCAGAG TCGGGTCTGC TTTCCAAAGT ATAGGACATT TGAAGAACTG	960
	GTATGCTACT CACTGGTGAA GGACAGTCAG GTGAAGGACT GTAAGCCCAC ACAAGCTCTT	1020
25	CTTATCTCTA CTAGAATTAA AATGTTAAGT CAAAACGGC TCCTTTTTTG CGCCTCCTAG	1080
	TGAAACTTAA CCAGCTAGAC CATTTGAGTA CCAGCATTTA GTTACAAACG TCAAAGGCTT	1140
30	CCGGTGCTGC TTACCTTCCT TTTTGTGTTAA TGTGCTTTTA TTTATTAAAA AAAATTACAA	1200
	TGAAGATGCC TGTTTTGTCT CTACTGTGTA CTCTGATCGT ATCTTTCCAA AGTGCAGACT	1260
	CTTGGAAGT TTTCTTAAAT TGTTCACTTT AAAGAAAATG ACGTACCAAC AATGATTTGG	1320
35	CTTTTATATT ACTGTAAGAT GTTATAATGT TAATGTGGAT GTAGTGCTTT TACTTTACAG	1380
	ATTGATTGGA ATAAGATTAT TGCATATGAA TTTACCCACA GGACTCTGAA TCATGTTACC	1440
40	CACTCCCCTC ACAATGTTGT CCACTTAGTG AGTTGCATTG ATCTATCCGT ACCAAATGAT	1500
	GTTGAATAAT TACATATCTT TCTTGACTAT ACTGATTCTT TATTTTGGTC ACTATTACTA	1560
	AATCTCTGTT AATATTCTCT CTTTAACTG AAAAGGGATG GGATAGAAGG GTTTGCAATG	1620
45	CCATATTATT GGTGGAGGGC TGTTTTAACA TCTTTGAAGT ATGGCTTGCT GAATATCTTT	1680
	ACCAACATCT TGAATATATA TTCTAGTGTC CACAAGATTT AGCAAAAAGA TAAAGCTTGG	1740
50	GTGGAATATC ATTTTAAAAAT GTTCATGTTT TGTTCATAT TTTCTTCACC TACTCTCCAA	1800
	ATATTGTAAT GCAAAAAGTC TCAGTAATGA TTTGGTAGTA TTAATTTTGT GGTCAATTGTT	1860
	TCTCTTCGAT AAATTATTTT TCATTAAATA CTTRTTAGAG GGTTTTGAAA TGTTTTCAA	1920
55	ATATGTGAAA TGTGAACTG CTGTCTTTTA TATTAAAGTA ATTAAAGAAA ATGTATTGTG	1980
	ATTGAAATTA TTTTGNCTC CACAAGATGG CTCTATGAGT ATTCTTCCAG GGATTCTAAT	2040
60	ATTTATTTAA GGTNATAAAA TCTTGACATT TATAATCTTT C	2081

-5 (2) INFORMATION FOR SEQ ID NO: 124:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1717 base pairs

(B) TYPE: nucleic acid

10 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 124:

15	CCCCGGCGGA GCTGGACCCG CGGTGGGCTA GGGGCAGGGC CGGAGCCGCG GCGGCGGAGC	60
	TGTGGATCCT TCATGATGAG AGATTTGGGG ACACCTCTCT CTCCTGTGTG TAGTTGATAG	120
	TTTGGTGGTG AAGAGATGGC TGACAGTGTC AAAACCTTTC TCCAGGACCT TGCCAGAGGA	180
20	ATCAAAGACT CCATCTGGGG TATTTGTACC ATCTCAAAGC TAGATGCTCG AATCCAGCAA	240
	AAGAGAGAGG AGCAGCGTCG AAGAAGGGCA AGTAGTGTCT TGGCACAGAG AAGAGCCGAG	300
25	AGTATAGAGC GGAAGCAAGA GAGTGAGCCA CGTATTGTTA GTAGAAATTT CCAGTGTGTG	360
	GCTTGGAATG GTGGAGTGTT CTGGTTCAGT CTCCTCTGT TTTATCGAGT ATTTATTCCT	420
	GTGCTTCAGT CGGTAACAGC CCGAATTATC GGTGACCCAT CACTACATGG AGATGTTTGG	480
30	TCGTGGCTGG AATTCCTCCT CACGTCAATT TTCAGTGCTC TTTGGGTGCT CCCCTTGTTT	540
	GTGCTTAGCA AAGTGGTGAA TGCCATTGG TTTGAGGATA TAGCTGACCT GGCATTGAG	600
35	GTATCAGGGA GGAAGCCTCA CCCATTCCCT AGTGTGAGCA AAATAATTGC TGACATGCTC	660
	TTCAACCTTT TGCTGCAGGC TCTTTTCTC ATTCAGGAA TGTTTGTGAG TCTCTTTCCC	720
	ATCCATCTTG TCGGTGAGT GGTAGTCTC CTGCATATGT CCCTTCTCTA CTCACTGTAC	780
40	TGCTTTGAAT ATCGTTGGTT CAATAAAGGA ATTGAAATGC ACCAGCGGTT GTCTAACATA	840
	GAAAGGAATT GGCCTTACTA CTTTGGGTTT GGTGTGCCCT TGGCTTTTCT CACAGCAATG	900
45	CAGTCTCAT ATATTATCAG TGGCTGCCTT TTCTCTATCC TCTTTCCCTT ATTCATTATC	960
	AGCGCCAATG AAGCAAAGAC CCCTGGCAAA GCRTATCTCT TCCAGTTGCG CCTCTTCTCC	1020
	TTGGTGGTCT TCTTAAGCAA CAGACTCTTC CACAAGACAG TCTACCTGCA GTCGGCCCTG	1080
50	AGCAGCTCTA CTTCTGCAGA GAAGTTCCCT TCACCGCATC CGTCGCCTGC CAAACTGAAG	1140
	GCTACTGCAG GTCACTGAGT TGCCTGCCAT CCAAAGGGGA TGGGCGGGAT TGGAAGAAGC	1200
55	TGTGGCAGCT CTTTTCCTTG TTCACCTCCC GCCTGCCAGG GAAGGCAGGA CCCGCTCTGC	1260
	CAAGGCCCT CTGCGTATTC CCTTCTCTCT GAGGAATTGA AATTTTGTG TCTGGTGCAC	1320
60	GTAAGGCAGA ATGTTCCCTG ACACCACTGT GTGGATTTT AACATCACCG TGAGTCTGAA	1380

AGGACCACAG GTTTTTCTGC AGCTATTTTC TAGCATTTGC CAGTCCCTGT GCCTGGACTG 1440
 ATTGGAACAC TTGTGTTTTTC TCCCTGTGCC ATTTACCCCT CCACCTTTCC ATCCTGCCTT 1500
 -5 CTACCACCCT TGGATGAATG GATTTTGTA TTTCTAGCTGT TGTATTTTGT GAATTTGTTA 1560
 ATTTTGTGTGTTTTCTGTGA AACACATACA TTGGATATGG GAGGTAAAGG AGTGTCCCAG 1620
 10 TTGCTCCTGG TCACTCCCTT TATAGCCATT ACTGTCTGT TTCTTGTAAC TCAGGTTAGG 1680
 TTTTGGTCTC TCTTGCTCCA CTGCAAAAAA AAAAAA 1717

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(2) INFORMATION FOR SEQ ID NO: 125:

(i) SEQUENCE CHARACTERISTICS:

20 (A) LENGTH: 804 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 125:

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CCACGCGTCC GGTCACTATG TAGTGGAGGG GCAGACACCC TCCCGCAAAT TCTGGAAGGT 60
 TCTTAGTCTC GACTAGGGCA GTAGCCCCAG GACTCCTAGT CGCCGGCTTC AGGTCACTGC 120
 30 CGGCTGAACG GAGCTGCCGT CGCCATGTTT GGCTGCTTGG TGGCGGGGAG GCTGGTGCAA 180
 ACAGCTGCAC AGCAAGTGGC AGAGGATAAA TTGTGTTTTG ACTTACCTGA TTATGAAAGT 240
 ATCAACCATG TTGTGGTTTT TATGCTGGGA ACAATCCCAT TTCCTGAGGG AATGGGAGGA 300
 35 TCTGTCTACT TTCTTATCC TGATTCAAAT GGAATGCCAG TATGGCAACT CCTAGGATTT 360
 GTCACGAATG GGAAGCCAAG TGCCATCTTC AAAATTTTCA GTCTTAAATC TGGAGAAGGA 420
 40 AGCCAACATC CTTTGGAGC CATGAATATT GTCCGAACTC CATCTGTTGC TCAGATTGGA 480
 ATTTCACTGG AATTATTAGA CAGTATGGCT CAGCAGACTC CTGTAGGTAA TGCTGCTGTA 540
 TCCTCAGTTG ACTCATTCAC TCAGTTCACA CAAAAGATGT TGGACAATTT CTACAATTTT 600
 45 GCTTCATCAT TTGCTGTCTC TCAGGCCAG ATGACACCAA GCCCATCTGA AATGTTTATT 660
 CCGGCAAATG TGGTTCTGAA ATGGTATGAA AACTTTTCAA GACGACTAGC ACAGAACCCCT 720
 50 NINTTTTGGN AAACATAATT TGAATAAAAT AATTTTAAAT GGATTNTGNA AAAAAAAAAA 780
 AAAAAAAAAA AAAAAAAAAA AAAA 804

55

(2) INFORMATION FOR SEQ ID NO: 126:

(i) SEQUENCE CHARACTERISTICS:

60 (A) LENGTH: 431 base pairs

(B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

-5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 126:

	GGCACAGCCC AGGGCCTTGA AGCCAGCTGG CCCTGGAGAG GGGCTGCTGT GCCAGCTTGG	60
	GGAGGGTCTG GGATGGGGCT GCCCTGATG GCCCTGATGT GGAGTACCTT GCCAGCATCT	120
10	GCTGGGGTGA ACTTTATTTT AGCCCTTCCC TTGTTGCTCT TATGGAAGAA CAGAGGAGGG	180
	GTGGGCAGGT CAGTGATGTC AGCAGTGGAG TGATTCCCAG CACAGCGGCT TCTGGGAAGA	240
15	GGGCATGGAG GCATTTCTTT CAGGGAATG GTCCATNATT TCAGCCAGAA GGCATTGCAT	300
	TAAGTTAAGT CCNGGACTTT TGTGGCCAG CTCTGTGTTA TTAAGGGCCC TTGGCGAAGA	360
20	CTTCAAGGAG GGGGCAAAAN GACCTTTAAG TTTTTAGGTT TAACACAGGG AACCCNCAA	420
	GGGTATTATT G	431

25

(2) INFORMATION FOR SEQ ID NO: 127:

(i) SEQUENCE CHARACTERISTICS:

	(A) LENGTH: 3752 base pairs
30	(B) TYPE: nucleic acid
	(C) STRANDEDNESS: double
	(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 127:

35	NGGCACGAGG AGAGTCACCT GGACTCAGAA CTAGAGATAT CCAATGACCC AGACAAAATT	60
	AAACTTCAGC TTCTAAGCA TAAGGAGTTT CAGAAGACTC TTGGTGGCAA GCAGCCTGTG	120
40	TATGATACCA CAATTAGAAC TGGCAGAGCA CTGAAAGAAA AGACTTTGCT TCCCGAAGAT	180
	ASTCAGAAAC TTGACAATTT CCTAGGAGAA GTCAGAGACA AATGGGATAC TGTTTGTGGC	240
45	AAGTCTGTGG AGCGGCAGCA CAAGTTGGAG GAAGCCCTGC TCTTTTCGGG TCAGTTCATG	300
	GATGCTTTGC AGGCATTGGT TGA CTGGTTA TACAAGGTGG AGCCACAGCT GGCTGAGGAC	360
	CAGCCCGTGC ACGGGGACC TTGACCTCGT CATGAACCTC ATGGATGCAC ACAAGGTTTT	420
50	CCAGAAGGAA CTGGNGAAAG CGAACAGGAA CCGTTCAGGT CCTGAAGCGG TCAGGCCGAG	480
	AGCTGATTGA GAATAGTCGA GATGACACCA CTTGGGTAAA AGGACAGCTC CAGGAACTGA	540
55	GCACTCGCTG GGACACTGTC TGTAACTCT CTGTTTCCAA ACAAAGCCGG CTTGAGCAGG	600
	CCTTAAAACA AGCGGAAGTG TTTGAGACA CAGTCCACAT GCTGTTGGAG TGGCTTTCTG	660
	AAGCAGAGCA AACGCTTCGC TTTGGGGAG CACTTCCTGG ATGACACAGA GGCCCTGCAG	720
60	TCTCTCATTG ACACCCATAA GGAATTCATG AAGAAAGTAG AAGAAAAGCG AGTGGACGTT	780

	AACTCAGCAG TAGCCATGGG AGAAGTCATC CTGGCTGTCT GCCACCCCGA TTGCATCACA	840
5	ACCATCAAAC ACTGGATCAC CATCATCCGA GCTCGCTTCG AGGAGGTCCT GACATGGGCT	900
	AAGCAGCACC AGCAGCGTCT TGAAACGGCC TTGTCAGAAC TGGTGGCTAA TGCTGAGCTC	960
	CTGGAAGAAC TTCTGGCATG GATCCAGTGG GCTGAGACCA CCCTCATTTCA GCGGGATCAG	1020
10	GAGCCAATCC CGCAGAACAT TGACCGAGTT AAAGCCCTTA TCGCTGAGCA TCAGACATTT	1080
	ATGGAGGAGA TGA CTCGCAA ACAGCCTGAC GTGGACCGGG TCACCAAGAC ATACAAAAGG	1140
15	AAAAACATAG AGCCTACTCA CGCGCCTTTC ATAGAGAAAT CCCGCAGCGG AGGCAGGAAA	1200
	TCCCTAAGTC AGCCAACCCC TCCTCCCATG CCAATCCTTT CACAGTCTGA AGCAAAAAAC	1260
	CCACGGATCA ACCAGCTTTC TGCCCCGTGG CAGCAGGTGT GGCTGTTAGC ACTGGAGCGG	1320
20	CAAAGGAAAC TGAATGATGC CTGAGATCGG CTGGAGGAGT TGAAAGAATT TGCCAACTTT	1380
	GACTTTGATG TCTGGAGGAA AAAGTATATG CGTTGGATGA ATCACA AAAA GTCTCGAGTG	1440
25	ATGGATTCTT TCCGGCGCAT TGATAAGGAC CAGGATGGGA AGATAACACG TCAGGAGTTT	1500
	ATCGATGGCA TTTTAGCATC CAAGTTCCCC ACCACCAAGT TAGAGATGAC TGCTGTGGCT	1560
	GACATTTTCG ACCGAGATGG GGATGGTTAC ATTGATTATT ATGAATTTGT GGCTGCTCTT	1620
30	CATCCCAACA AGGATGCGTA TCGACCAACA ACCGATGCAG ATAAAATCGA AGATGAGGTT	1680
	ACAAGACAAG TGGCTCAGTG CAAATGTGCA AAAAGGTTTC AGGTGGAGCA GATCGGAGAG	1740
35	AATAAATACC GGTTCCTCCT CGGCAATCAG TTTGGGGATT CTCAGCAGTT GCGGCTGGTC	1800
	CGTATTCTGC GCAACCGTGA TGGTTCCGCT TGGTGGAGGA TGGATGGCCT TGGATGAATT	1860
	TTTAGTGAAA AATGATCCCT GCCGAGCAG AGGTAGAACT AACATTGAAC TTAGAGAGAA	1920
40	ATTTCATCTA CCAGAGGGAG CATCCCAGGG AATGACCCCC TTCCGCTCAC GGGGTCGAAG	1980
	GTCCAAACCA TCTTCCCGGG CAGCTTCCCC TACTCGTTCC AGCTCCAGTG CTAGTCAGAG	2040
45	TAACCACAGC TGTACATCCA TGCCATCTTC TCCAGCCACC CCAGCCAGTG GAACCAAGGT	2100
	TATCCCATCA TCAGGTAGCA AGTTGAAACG ACCAACACCA ACTTTTCATT CTAGTCGGAC	2160
	ATCCCTTGCT GGTGATACCA GCAATNAGTT CTTCCTCCGGC CTCCACAGGT GCCAAACTA	2220
50	ATCGGGCAGA CCTAAAAAG TCTGCCAGTC GCCCTGGGAG TCGGGCTGGG AGTCGAGCCG	2280
	GGAGTCGAGC CAGCAGCCGG CGAGGAAGTG ACGCTTCTGA CTTTGACCTC TTAGAGACGC	2340
55	ATTGCTTGTT CCGACACTTC AGAAAGCAGC GCTGCAGGGG GCCAAGGCAA CTCCAGGAGA	2400
	GGGCTAAACA AACCTTCCAA AATCCCAACC ATGTCTAAGA AGACCACCAC TGCTTCCCC	2460
	AGGACTCCAG GTCCCAAGCG ATAACACTGT CTAAGCACCC CCAAGCCACT ATCCACTTTG	2520
60	AATCCTGCTC CATACATTGG GTGTATATT ATTCTGAACG GGAGAAGTTA TATTGTTAAA	2580

	AGTGTAAG AATAATTGTG TTATGAAGCT GCCTTATTTT TTTTCTTTTT GTAAGTTACT	2640
-5	ATTTTCATGT GAATATTTAT GTAGATAAAA TTGCGCTCCT GGTAACCCCTG TAATGGATGG	2700
	GGCCAGAGAA TGAAATATTT GAGAAAAACA AGTGAAAAGG TCAAGATACA AATGTGTATT	2760
	AAAAAAAAA AAGCCTATTA ATAGGGTTTC TGCGCGGTGC AGGGTTGTAA ACCTGCTTTA	2820
10	TCTTTTAGGA TTATTCCTAA ATGCATCTTC TTTATAAACT TGACTTGCTA TCTCAGCAAG	2880
	ATAAATTATA TTAAAAAAT AAGAATCCTG CAGTGTTTAA GGAACCTCTT TTTTGTAAT	2940
15	CACGACACC TCAATTAGCA AGAAGTGGG GGAGGGCTTT TTCCATTGTT TAATGTTTTG	3000
	TGATTTTATG CTAAAGAGAG GGAACCTCAT CTAAGTAACA TTTGCACATG ATACAGCAAA	3060
	AGGAGTTCAT TGCAATACTG TCTTTGGATA TTGTTTCAGT ACTGGGTGTT TAAAGGACAA	3120
20	ATAGCTGCTA GAATTCAGGG GTAAATGTAA GTGTTTCAGAA AACGTCAGAA CATTTGGGGT	3180
	TTTAAACTGA TTGTGTGCTC CCTATCCAGC CTAGACACCA GTAACCTCTG TGTTCACCAG	3240
25	GACCCAGACC CTTGGCAAGG GATAGGCTCG TTGGTGACAT TGTGAATTTT AGATTTGTTT	3300
	TATCCACTTT TTTTGCTATT TATTTAAATG GTCGATCAAC TTCCCACAAA CTGAGGAATG	3360
	AATTCACGA GCCTGTCTG AAAATGTGGA CGTAAGACAA ACACGTGCTC GTCCTTTAAT	3420
30	GGAGTTCACC AGCACACTG TTAACCACTG CTGTTTGCTT TCGTCTTTTT TTGTGCGTAA	3480
	TAAAGTCAAC TGACCAAGTG ACCATGAAAA GGGGCTGTCT GGGGCTCCTG TTTTTTAGCT	3540
35	GCTGTCTCTC AGCTCCGACC ATGTTGCTGT GTGATTATCT CAATTGGTTT TAATTGAGGC	3600
	AGAAACTGAA GCTCTACCA TGAAGTGTG AGAAACAAGA CACACTTTTG TATTAAAATT	3660
	GCTTGCAGTA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAGTCAGAG GGGGCCCGGT	3720
40	ACCCAATTCT CCGTATATGA TCGTAAACAA TC	3752

45 (2) INFORMATION FOR SEQ ID NO: 128:

(i) SEQUENCE CHARACTERISTICS:

- 50 (A) LENGTH: 1144 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 128:

55	TGACCCCTCTG CCTGCCGGGC TCAGTGCTGG ACGCTTTCTG TTTTGTGCA GTCGGTCTCTC	60
	GGTAACACCA GCGGCTGTG GTCCACCACT CCAATTCAGCA GCTCCATTG GTCCAGCAAC	120
60	CTTAGCAGCG CCTTCCCTTC ACCACTCCAG CAAACACGCT GGCAAGCATC GGCCTCATGG	180

	GCACAGAAAA CTCCCCTGCT CCTCACGCTC CCTCCACCTC CAGTCCAGCT GACGACTTGG	240
	GACAGACCTA CAACCCGTGG CGGATATGGA GCCCCACGAT TGGAAGAAGA AGCTCGGACC	300
-5	CTTGGTCTAA TTCGCACTTT CCTCACGAGA ATTAAATTAA GCAAAAAACA AACAAACATA	360
	GTGGGCCCTC GTCTAGATCA TGATGTGCCA GTTCTGAGA CATCTTTTTA AGGCTCTTAC	420
10	TGCAGCTCCC CTCCCCACCC TCCTCTTCTT TGCAAAACAG ACCCAAGCAG GGCAGGCTCA	480
	GACCACTCGC TTCTTTCAGA TCTTCTTGC AATTATGATA ACATGAGATT TGCTGTGTG	540
	CTTTTAGAGA AAAGTCTGGA CTCAGCCACA AACTCTAATA AGACCTGTAC ATCTGAGAAC	600
15	CTTTCCCGTT ACTGCGTTTT CACCACCTGT CTTCCTCATG CTTTATTTAT CTGTATGAAC	660
	ACAGATTGTA CATTACAGCT AAGGAAATAA TTTGAGTTGA TTCAGAAATC CTGGCATGTG	720
	ACAATTTTGT TAAATTACCA AGTTTGGTTT TTAATAATTT CTCAATATTA TCGCCAAGA	780
20	TCTAATTTTA AAAGTGTATG AGGACTTTGT GCTGAAAATA GAGTATTTTT TTAAAGTAAG	840
	GCTGTCTTGG TTTAAAAGCA GATTACAGAA ATGTAAGTCA ACTTAAGAAC RGTGAATGAA	900
25	TGTAAAAACA TTCAGTYGAG ACCATATGCA TTTTCTGTGC TGTTTGTAAT TGAGGTATGT	960
	AACATTTGTA TACCTGAACT TATTTTAAAG ATGAACTGAA ATGCACATAG CCAAGTCTTG	1020
30	AGATACAAGA TTGAATGTGT ATTTCTTAAA AATACAACCT TGTGTGTGAC TTTGAAATAA	1080
	ATGATGCTTT TTTCAAAAAA AAAAAAAAAA AAAAAAAAC TCGAGGGGGG GCCCGGTACC	1140
	CAAT	1144

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(2) INFORMATION FOR SEQ ID NO: 129:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1830 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 129:

	GCATGCAGAG GAGCACCCTG AGCGTGTGCC TGGAGCAGGC GGCCATSTTG GCACGGAGCC	60
50	ACGGGTGCT GCCCAAGTGC ATCATGCAGG CCACGGACAT CATGCCGAAC AGGGCCCAAG	120
	GGTGGAGATT CTGGCCAAA ACCTGCGAGT CAAGGACCAG ATGCCCCAGG GTGCTCCGCG	180
55	CCTCTACCGC CTCTGCCAGC CGCCGGTGA TGGGGACCTC TGAACACCCA AATGCCCCAC	240
	GCTGGGCCGC GGCTCTGGA GCTGGGATTT GGGAGGACAC AGCAGGCAGC GCTGGCTTC	300
	TCCAGGGATG GCCCAANGCT TCCGCARCCG CCCGTTCGG GACCTGCCCA GCGTCTCTCC	360
60	TGCCTCTTC CGGGACAAGC CTGGCCACCC TCGCTGTGAT GACGAGCTGG CTGATTGGCC	420

CTGGGCCGGC CCATTCCTTCA CACGCCTGCC AGAAGCTGGA GGGGTGCTGG AGACCCATAG 480
 AGCTGATGGG AGCAGCTGGT GCCTGGCCTT CGGCTCCTGC GTCCCCAGAA CCCAAGGGAA 540
 5 CGTCATGGAG GCCACATGGG GCCACCCGGC TCCCTCGGGA TGGCTCCGCT GCACCTTTGA 600
 AACCCCGGTT TCCTTCAACG TCCACATTCC AGGTGACCAC ACGTGTCTCC TCCTCCTCAT 660
 10 CTTAGCTTCC AGGTTCAACC TAACCTGTA CTAACCTGCT TGGTGGACTT GGAAAAGACT 720
 TGGCTCTGTC GGGAAAGGAG AGACGGGGCC TCCATCACGC CTGTTACCAG AGGATCCCCG 780
 AGAGCCACAC CAGCTCTGGA CATCACCGCC CCTGGAAGTG GGGCCACCAG CCCTGGGCAC 840
 15 GAGATTGCT CTGACTTTAT TTATATGGCA TGAAATCTCT GGTTTATTTT GGGATTTTTT 900
 GTGTGTTGGT TGTCAAAGT TGTTTTTTC TAAAGTTGTG TGATTATATA TTTGACATTT 960
 20 TACATTTCAA AGAAAGGTAT GTTGCTAAC AGGGGACCAA CAGAAGGTAG TATTGACAAC 1020
 TGTTCCTGCT TCTACTAAAA AAAAAAGAGC ACAAAGAAA AACTAAATTA TTGAAAAATT 1080
 AAAAAATGTC ATTGTTTCCT GTTTGTTAAT ATTAGGGTTG TAAGGTGTCG TTTTGAGGTA 1140
 25 TCGACTGTGA TTCCTTCCCC CACCCTCCAT TCTCCAGCGG TTGGCCGGTG TTAGAACTCG 1200
 CTCTCTTTGA GTGACTGGCT ACAAGGGCCT GAGAGGTGGC CAGCCAGGGT TGGAGCTGGA 1260
 30 GGGGATGGAG CCCACCTGA GGTGCCGTGT CACACGGGTT AGAGGGTCAC TGGGAAACAC 1320
 CGGGCGGTGG CTTCTGTGAT TTATTTTCTT GATGGTAACT TCTCAGAGCA GGGCRATTGG 1380
 GACATCACCA GCCAGAGCAC AGGAAGCCAC CCTGCCTGCT GGGGAGGAGG GACCCACACA 1440
 35 AGCCCCCTCG GCAGTTTGTG CCCCCAGCTT CGGTATGCCT TCAGGGAAG GTCACAGCTG 1500
 GGGAGGAAGC GGGGGACGC CTGTCACCCC TGGCAGGTGG TGAGTTCAGG TGGGGGCTCC 1560
 40 CTGCTKCCCC CAGGCCTGGG AGCTTGAAGC CCTCCCGGCA TCTGGCATCC GAGCCTCCCC 1620
 CCCTCCAGGG TGCGCTTCCC TCTCTGCCG CAGCATACAC GAGGGCAGGC AGTGGCCTTG 1680
 TCACTGTATC TTGCATCAGA GACAAAGGAG GACCCGCTTT AGCCCTGCTG CGGGAAATGG 1740
 45 GGGATGGCCC AGGGCCAGCG CATTGTGCAC TGGTTACTT TAAATGTAC AGATTCTTCT 1800
 CGTTAAATTC TTGATAGATT TTTTATTATT 1830

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(2) INFORMATION FOR SEQ ID NO: 130:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1864 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 130:

	GGCGCCCCG ATGGCGACCC CAGCCTCGGC CCCAGACACA CGGGCTCTGG TGGCAGACTT	60
-5	TGTAGGTAT AAGCTGAGGC AGAAGGGTTA TGTCTGTGGA GCTGGCCCCG GGGAGGGCCC	120
	AGCAGCTGAC CCGCTGCACC AAGCCATGCG GGCAGCKGGA GATGAGTTCG AGACCCGCTT	180
10	CCGGCGCACC TTCTCTGATC TGGCGGCTCA GCTGCATGTG ACCCCAGGCT CAGCCCAACA	240
	ACGCTTCACC CAGGTCTCCG ATGAACTTT TCAAGGGGGC CCCAACTGGG GCCGCCTTGT	300
	AGCCTTCTTT GTCTTTGGGG CTGCACGTGT TGCTGAGAGT GTCAACAAGG AGATGGAACC	360
15	ACTGGTGGGA CAAGTGCAGG AGTGGATGGT GGCCTACCTG GAGACGCGGC TGGCTGACTG	420
	GATCCACAGC AGTGGGGGCT GGTATCCCA GATCACTGAA GCTGAGATGG CTGATGAAGT	480
20	AATTTGCAGT GAAATTTTAA GCGACTGTGA CTCTGCTGCA AGTTCCCCAG ATCTTGAGGA	540
	GCTGGAAGCT ATCAAAGCTC GAGTCAGGGA GATGGAGGAA GAAGCTGAGA AGCTAAAGGA	600
	GCTACAGAAC GAGGTAGAGA AGCAGATGAA TATGAGTCCA CCTCCAGGCA ATGCTGGCCC	660
25	GGTGATCATG TCCATTGAGG AGAAGATGGA GGCTGATGCC CGTCCATCT ATGTTGGCAA	720
	TGTGGACTAT GGTGCAACAG CAGAAGAGCT GGAAGCTCAC TTTCATGGCT GTGGTTCAGT	780
30	CAACCGTGT ACCATACTGT GTGACAAATT TAGTGGCCAT CCCAAAGGGT TTGCGTATAT	840
	AGAGTTCTCA GACAAAGAGT CAGTGAGGAC TTCCTTGGCC TTAGATGAGT CCCTATTTAG	900
	AGGAAGGCAA ATCAAGGTGA TCCCAAAACG AACCAACAGA CCAGGCATCA GCACAACAGA	960
35	CCGGGGTTTT CCACGAGCCC GCTACCGCGC CCGGACCACC AACTACAACA GCTCCCCTC	1020
	TCGATTCTAC AGTGGTTTTA ACAGCAGGCC CCGGGTCCG GTCTACAGGG GCCGGGCTAG	1080
40	AGCGACATCA TGGTATTCCC CTACTAAAA AAAGTGTGTA TTAGGAGGAG AGAGAGGAAA	1140
	AAAAGAGGAA AGAAGGAAAA AAAAAAGAAT TAAAAAATA AAAAAAATA ACAGAAGWTG	1200
	MCCTTGATGG AAAAAAATA TTTTTTAAAA AAAAGATATA CTGTGGAAGG GGGGAGAATC	1260
45	CCATAACTAA CTGCTGAGGA GGGACCTGCT TTGGGGAGTA GGGGAAGGCC CAGGGARTGG	1320
	GGCAGGGGGC TGCTTATTCA CTCTGGGGAT TCGCCATGGA CACGTCTCAA CTGCGCAACT	1380
50	GCTGCCCCAT GTTCCCTGC CCCACCCAC CCCCTCTCTC CGGCTCCCTG CCCCTCCAGA	1440
	TTGCCTGGTG ATCTATTTTG TTTCTTTTG TGTTCCTTT TCTGTTTTGA GTGTCTTTCT	1500
	TTGCAGTTTT CTGTAGCCGG AAGATCTCCG TTCCGCTCCC AGCGGCTCCA GTGTAAATTC	1560
55	CCCTTCCCCC TGGGGAATG CACTACCTTG TTTTGGGGG TTTAGGGGTG TTTTGTTTT	1620
	TCAGTTGTTT TGTTTTTTTG TTTTTTTT TTTCTTTTG CTTTTTTCCC TTTTATTTGG	1680
60	AGGAATGGG AGGAAGTGG AACAGGGAGG TGGGAGGTGG ATTTGTTTTA TTTTTTTAGC	1740

TCATTTCCAG GGGTGGGAAT TTTTTTTTAA TATGTGTCAT GAATAAAGTT GTTTTTGAAA 1800
 AKAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA 1860
 5 AAAA 1864

10 (2) INFORMATION FOR SEQ ID NO: 131:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2041 base pairs
 (B) TYPE: nucleic acid
 15 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 131:

20 GGCACGAGCG CGCGGCAGGG CCCTGGACCC GCGCGGCTCC CGGGATGGT GAGCAAGGCG 60
 CTGCTGCGCC TCGTGCTGTC CGTCAACCGC AGGAGGATGA AGCTGCTGCT GGGCATCGCC 120
 25 TTGCTGGCCT ACGTCGCCTC TGTTTGGGGC AACTTCGTTA ATATGAGGTC TATCCAGGAA 180
 AATGGTGAAC TAAAAATTGA AAGCAAGATT GAAGAGATGG TTGAACCACT AAGAGAGAAA 240
 ATCAGAGATT TAGAAAAAG CTTTACCCAG AAATACCCAC CAGTAAAGTT TTTATCAGAA 300
 30 AAGGATCGGA AAAGAATTTT GATAACAGGA GGCGCAGGT TCGTGGGCTC CCATCTAACT 360
 GACAACTCA TGATGGACGG CCACGAGGTG ACCGTGGTGG ACAATTTCTT CACGGGCAGG 420
 35 AAGAGAAACG TGGAGCACTG GATCGGACAT GAGAACTTCG AGTTGATTAA CCACGACGTG 480
 TGGAGCCCCT CTACATCGAG GTTGACCAGA TATACCATCT GGCATCTCCA GCCTCCCCTC 540
 CAAACTACAT GTATAATCCT ATCAAGACAT TAAAGACCAA TACGATTGGG ACATTAAACA 600
 40 TGTGCGGCT GGCAAAACGA GTCGGTGCCC GTCTGCTCCT GGCCTCCACA TCGGAGGTGT 660
 ATGGAGATCC TGAAGTCCAC CCTCAAAGTG AGGATTACTG GGGCCACGTG AATCCAATAG 720
 45 GACCTCGGGC CTGCTACGAT GAAGGCAAAC GTGTTGCAGA GACCATGTGC TATGCCTACA 780
 TGAAGCAGGA AGCGGTGGAA GTGCGAGTGG CCAGAATCTT CAACACCTTT GGGCCACGCA 840
 TGCACATGAA CGATGGGCGA GTAGTCAGCA ACTTCATCCT GCAGGCGCTC CAGGGGGAGC 900
 50 CACTCACGGT ATACGGATCC GGGTCTCAGA CAAGGGCGTT CCAGTACGTC AGCGATCTAG 960
 TGAATGGCCT CGTGGCTCTC ATGAACAGCA ACGTCAGCAG CCCGGTCAAC CTGGGGAACC 1020
 55 CAGAAGAACA CACAATCCTA GAATTTGCTC AGTTAATTAA AAACCTTGTT GGTAGCGGAA 1080
 GTGAAATTCA GTTCTCTCTC GAAGCCCAGG ATGACCCACA GAAAAGAAAA CCAGACATCA 1140
 AAAAAGCAAA GCTGATGCTG GGTGGGAGC CCGTGGTCCC GCTGGAGGAA GGTTTAAACA 1200
 60 AAGCAATTCA CTAATTCCGT AAAGAACTCG AGTACCAGGC AAATAATCAG TACATCCCCA 1260

AACCAAAGCC TGCCAGAATA AAGAAAGGAC GGACTCGCCA CAGCTGAACT CCTCACTTTT 1320
 5 AGGACACAAG ACTACCATG TACACTTGAT GGGATGTATT TTTGGCTTTT TTTTGTGTGTC 1380
 GTTTAAAGAA AGACTTTAAC AGGTGTCATG AAGAACAAAC TGGAATTTCA TTCTGAAGCT 1440
 TGCTTTAATG AAATGGATGT GCCTAAAAGC TCCCCTCAAA AACTGCAGA TTTTGCCTTG 1500
 10 CACTTTTGA ATCTCTCTTT TTAATGAAAA TAGCGTAGAT GCATCTCTGC GTATTTTCAA 1560
 GTTTTATTTAT CTGTCTGTGA GAGCATATGT TGTGACTGTC GTTGACAGTT TTATTTACTG 1620
 GTTCTTTTGT GAAGCTGAAA AGGAACATTA AGCGGGACAA AAAATGCCGA TTTTATTTAT 1680
 15 AAAAGTGGGT ACTTAATAAA TGAGTCGTTA TACTATGCAT AAAGAAAAAT CCTAGCAGTA 1740
 TTGTCAGGTG GTGGTGCGCC GGCATTGATT TTAGGGCAGA TAAAGAATT CTGTGTGAGA 1800
 20 GCTTTATGTT TCTCTTTTAA TTCAGAGTTT TTCCAAGGTC TACTTTTGAG TTGCAAACTT 1860
 GACTTTGAAA TATTCCTGTT GGTTCATGATC AAGGATATTT GAAATCACTA CTGTGTTTTG 1920
 CTGCGTATCT GGGCGGGGG CAGGTTGGGG GGCACAAAGT TAACATATTC TTGGTTAACC 1980
 25 ATGGTTAAAT ATGCTATTTT AATAAAATAT TGAAACTCAC CAAAAAAAAA AAAAAAAAAA 2040
 A 2041

30

(2) INFORMATION FOR SEQ ID NO: 132:

35 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 2012 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

40

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 132:

TACCAAGCTG CAAGAATCTA CTATATCATG GCAGAAGAAG TAGAGTGGGA CTATTGCCCT 60
 45 GACCGGAGCT GGAACGGGA ATGGCACAAC CAGTCTGAGA AGGACAGTTA TGGTTACATT 120
 TTCCTGAGCA ACAAGGATGG GTCCTGGGT TCCAGATACA AGAAAGCTGT ATTTCAGGGAA 180
 TACACTGATG GTACATTGAG GNTCCCTCGG CCAAGGACTG GACCAGAAGA ACACTTGGGA 240
 50 ATCTTGGGTC CACTTATCAA AGGTGAAGTT GGTGATATCC TGACTGTGGT ATTCAAGAAT 300
 AATGCCAGCC GCCCCTACTC TGTGCATGCT CATGGAGTGC TAGAATCTAC TACTGTCTGG 360
 55 CCACTGGCTG CTGAGCCTGG TGAGGTGGTC ACTTATCACT GGAACATCCC AGAGAGGTCT 420
 GGCCTGGGC CAATGACTCT GCTGTGTTT CCTGGATCTA TTATTCTGCA GTGGATCCCA 480
 TCAAGGACAT GTATAGTGGC CTGTGGGGC CCTTGGCTAT CTGCCAAAAG GGCATCCTGG 540
 60

	NAGCCCCATG GAGGACGGAN TGACATGGAT CGGGAATTTG CATTGTGTGT CTTGATTTTT	600
	GATGAAAATA AGTCTTGGTA TTTGGAGGAA AATGTGGCAA CCCATGGGTC CCAGGATCCA	660
-5	GGCAGTATTA ACCTACAGGA TGAAACTTTT TTTGGAGAGCA ATAAAATGCA TGCAATCAAT	720
	GGGAAACTCT ATGCCAACCT TAGGGGTCTT ACCATGTACC AAGGAGAACG AGTGGCCTGG	780
10	TACATGCTGG CCATGGGCCA AGATGTGGAT CTACACACCA TCCACTTTCA TGCAGAGAGC	840
	TTCTCTATC GGAATGGCGA GAACTACCGG GCAGATGTGG TGGATCTGTT CCCAGGGACT	900
	TTTGAGGTTG TGGAGATGGT GGCCAGCAAC CCTGGGACAT GGCTGATGCA CTGCCATGTG	960
15	ACTGACCATG TCCATGCTGG CATGGAGACC CTCTTCACTG TTTTTTCTCG AACAGAACAC	1020
	TTAAGCCCTC TCACCGTCAT CACCAAAGAG ACTGAAAAAG CAGTGCCCCC CAGAGACATT	1080
20	GAAGAAGGCA ATGTGAAGAT GCTGGGCATG CAGATCCCCA TAAAGAATGT TGAGATGCTG	1140
	GCCTCTGTTT TGGTTGCCAT TAGTGTCAAC CTCTGCTCG TTGTTCTGGC TCTTGGTGGG	1200
	GTGGTTTGGT ACCAACATCG ACAGAGAAAG CTACGACGCA ATAGGAGGTC CATCCTGGAT	1260
25	GACAGCTTCA AGCTTCTGTC TTTCAAACAG TAACATCTGG AGCCTGGAGA TATCCTCAGG	1320
	AAGCACATCT GTAGTGCAT CCCAGCAGGC CATGGACTAG TCACTAACCC CACTCTCAA	1380
30	GGGCATGGG TGGTGGAGAA GCAGAAGGAG CAATCAAGCT TATCTGGATA TTTCTTTCTT	1440
	TATTTATTTT ACATGGAAAT AATATGATTT CACTTTTCTT TTAGTTTCTT TGCTCTACGT	1500
	GGGCACCTGG CACTAAGGGA GTACCTTATT ATCCTACATC GCAAATTTCA ACAGCTACAT	1560
35	TATATTTCTT TCTGACACTT GGAAGGTATT GAAATTTCTA GAAATGTATC CTCTCACAA	1620
	AGTAGAGACC AAGAGAAAAA CTCATTGATT GGGTTTCTAC TTCTTTCAAG GACTCAGGAA	1680
40	ATTTCACTTT GAACTGAGGC CAAGTGAGCT GTTAAGATAA CCCACACTTA AACTAAAGGC	1740
	TAAGAATATA GGCTTGATGG GAAATTGAAG GTAGGCTGAG TATTGGGAAT CCAAATTGAA	1800
	TTTTGATTCT CCTTGGCAGT GAACTACTTT GAAGAAGTGG TCAATGGGTT GTTGCTGCCA	1860
45	TGAGCATGTA CAACCTCTGG AGCTAGAAGC TCCTCAGGAA AGCCAGTTCT CCAAGTTCTT	1920
	AACCTGTGGC ACTGAAAGGA ATGTTGAGTT ACCTCTTCAT GTTTTAGACA GCAAACCCTA	1980
50	TCCATTAAAG TACTTGTTAG AACACTGAAA AA	2012

55 (2) INFORMATION FOR SEQ ID NO: 133:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1669 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 133:

-5	GAGCAGTATT TTAACCAACT TGTATTACAG ATGTTACAGT TCATGTTAGG AAGTCAGAAA	60
	AGACTTTGTT TGTCTTTGTT CTGCTGATGT GAGTCATGTT TTGTGGGGTC TTCCATGGCA	120
	CATTTACCTG TTGCTCCGTC CAGATGTTGA GGGCCAGTCT AGGCTGACAC ATCCTACCCG	180
10	AGGACAAGCC TGTTCCTCCAT TTCTTCACTC TCCCCTCCCC ATATAGCAAC TCTCCCAGGT	240
	TTAGATTACC GTTTTCGACG ACAGATTAAC CAAAAATGCC CCACACAGGT TTTATTACTG	300
15	TTATATACTA TACTTTTAAC AGTACAGACC CTAAATTTTA TTATTTGTTG CTCCCCCAAT	360
	CTGATACCAA ATGTTTAAAG TTGTTTGAAA TCCAAACATG GTAGTGTTC A TGGGTAAATA	420
	TTTTCTAGGC TATGTAAGAG TTAGCAGCCC ATAGCATAGA AGTAATCAAG TAGCATCTGA	480
20	GACTGTTGGA GGCAC TAGGG CCTCTCTGGG CCTAACAGCC TCACCTCCCC AGCCTCACCT	540
	TGCTGTCTC TGACACTGCC ATCAGGGCTG TTAGTGGCAC CTGTATGAGG CCAAGTGTGC	600
	GTCCAGGGGA ACAGCACAGG TTAATGCGTC TCCCTAGAAC TCATGAAGTC AGTTTAATTC	660
25	ATGCATGAAC ATGAGTTCAT TTTATGTTTT ATATAGCTTT CTTAGACATA CCAAACCATC	720
	ATTCATAAAT CAGATAAATT ATTCAGTTTT TGTGTTTAGA AAGCTAAGTA TGTGTAGCTG	780
30	GAAACAAAAA TGAGCGTGT TCTCTCTCTG TTAATCTAGA GTGTGCAGTT ACACATGTGT	840
	GGATAATTTT ATGTTCCAGG GGCGCTTGGC ATCTCCCATG GACTGATTCC CAGGAAGAAA	900
35	AGCCCAAAGG GAAACCCACG ATTCTTTTCG AGTAGATGTG GGAAAGAGCC CATTGGAGGA	960
	TATGAGGTCC TGTGAAATTC AGTTGTGTGT GTGGCTCCTT GTTAGCAGTC ATGTTGACAT	1020
	GGTGTTAGGA GGCTCCCAT CCACCTTTTA CATGATGTAG GGACCAGTGT CTTGTGAGAT	1080
40	TAACCTTGGG ACACAGTGGG TTAGCCTGGA GAAAATGAGA GGCCCTGCCT GGACCCAGGG	1140
	AGAGGAGCCA GTGACACAGG CAGAGCGGTG CAGCCCTCCT TCCCTTCCAT TTGGAGGAGG	1200
45	TGGTGCCAGG AGCCTGCCC GCTTACCTCTG CTGAAGCATA AGTGGACTTT GCTTTTGGGG	1260
	CTTATCTCTG ATACATGCTG GAGCCCTGCC TCTCCACTGC TAGATGGAAC CTGGAATCTC	1320
	TCATCTACCT CTTAGTCTGT CAGTTTCTAC GTGTGAGAAG CAAGCTTGTG GGCCAGTGTG	1380
50	CTGTGATACG CTGTAGCACT TAAAAAATAA TTCCAGGGTT CCCTGGAAAA CCAGTCCCAG	1440
	GGTTCCTATG ATCTGTAGTT TCTACCTGGA TTATAACTGG TTTTGGGTAC CTGAAATTTG	1500
55	ATTGGTTAGC CTTAATTATA GTCTGGCGTG ATCATGTAGA ATCTTTTCTG GTGAACAGAT	1560
	CATAAAGTTC TATCAAGGAG TTCTATCAAG GCATCCATGT CAGTGGTGCT ATGCTGGTTA	1620
60	CAACTTGAGA TTTTGTGAAAT AAAAAATTTG TCATAAAAAA AAAAAAAA	1669

(2) INFORMATION FOR SEQ ID NO: 134:

5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1565 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 134:

	CACTTTTGCT ATATAACCTA AGTGATAACC CTCTTTTAGT TACCTGCCAA ACTCTGGNCT	60
15	TGGTTTATAT TGCAGTTAAC ACAGTTACAA AGCTGTAATG GTGTCTTTTT TTCCTTTGTA	120
	ACGGAATGTG TAAATCAAAG TATATACATT GTGTGGTGT CCTGTTTCTG GAGTTTCATG	180
20	AGGATTTACA CATGGCATTG AGTGTCTGT ATAGATCTGC CTACCTTTGT GAATTCATCT	240
	GTTAACCCCT CTTCCTTTGA GAGAGCACCG GCGATGGTGG TTAATCCTT GTGTTTCTC	300
	TCTCTCTAC TGGTTATTCT TGAATTAAGC ACAGACTCGT CAGCTCGGTT GCTTTATCAT	360
25	GAATAATGTG TGTGACCTTG CAGTTCTTCC ACAGTTCAGC AAACAAGTGC TAGCTTCACT	420
	GACCAAAAAT TAAGGAAGGA AAACACAGTT TTTAAAACGA TCCATCTTTT AACAGCCGAA	480
30	ACCGATGTGT CTATGGTGCT GCACCTTGCT GTTGTACTTC TGAAATCAGA CGTGTGTGAA	540
	CGATCATTTT TGAATTAACC GTGAGATGCT CACGAGTACC CTTCCTGTTG TTTTGTTAGC	600
	ATTGAAATCG AGACTATTTA TTTGGAATAT ATACAACAGT GTTTTCCAC TGTATTTTAT	660
35	TTGCAAAAGT TGAGAACTGC TTTCTCTACC TTTTGCAAAA TAATGATAT TCCATATTGG	720
	ATTCTCAAAG ACTTCGATAT GGTGAACCTA TTAAACCTAG AAATGTATT CATCCTTTCA	780
40	TGACTGTGGC CTGAGTTCCC CAGCCCTCTT CCTCCTTTT TTTAGATGAG ATTTAGCACA	840
	CTCTCAGTTA TTTAAACATG CAACATTTCT TGAGTATGTA TGTGAGGCC ATCTGAGCTC	900
	ATAGCTGATT CAGTAACCAG TTTTATGCTG TGTATTCAC ACTCACTACT TAATACTGCC	960
45	ATGGTGAAAA TGTGGAGGAA AAATGTATCC ATGTGTGTCT GGAAGCATA TAACTTTGTA	1020
	CATTTTAA TACTCTGATT CTGTAACATT TCTGAGTTT GTTTGTGTTT ACAGNAAAAA	1080
50	AAAAAAAAGT GATAAAGCAA TCAGAAGACC AAGAGGTTTA CTATGATGC TTAGGGTCGT	1140
	CTGACCTTGG CTGGCCAATA GACCTACACG GCCAAATTAA TTTACGAGAG TAATAATTTT	1200
	TCAAAAGCCA ATTTTMTTCT TGTATTTTCT GTATGAACT GCCAATATCA TGAATAGAAA	1260
55	GGGAGAACCA TAAAGGAGAA AGAACGTGAT GTTCTGTTAT GTTCATGTAA ACCTAAAGAA	1320
	ACAGTGTGGA GGCAGGCGCG ATCAGCCGAA CTCTAGGAC TTGGTGTGTC TTGGAAGGCA	1380
60	TCCATACCTG CATTTTGCAT TCTTCGTATG TAATCATATT GCCAAAGACA AACTATTTCA	1440

TCATTTATTG TAAATAACAC TTTTCCCCAG ACCTACCATA AAGTTTCTGT GATGTATTGT 1500
 CTTCCAGTTG CAATAAAAAT TACTGAGTTG CATCAATTGA AGAAAAAAAA AAAAAAAAAA 1560
 -5 CTCGA 1565

10 (2) INFORMATION FOR SEQ ID NO: 135:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2007 base pairs
 (B) TYPE: nucleic acid
 15 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 135:

20 TCTAAAAGCC CCCTTATACC CCACTTTGTG CAGCAAAGAT CCCCCTGCAG GTCACAGCCT 60
 GATTTGTGGC CAGGCTGGAC AAATTCCTGA GGCACAACCT GGCTTCAGTT CAGATTTCAA 120
 GCTGTGTTGG TGTGGGACC AGCAGAAGGC AAACGTCCAG CCAACACACA GGA CTGTAAG 180
 25 AGGACTCTGA GCTACGTGCC CTGTGAAGAC CCCCAGGCTT TGT CATAGGA GGTCGTT CAG 240
 CTTCCCCAAA GTCAGAGGTG ATTTGATTG GGAAGACTG AATATTCACA CCTAAGTCGT 300
 30 GAGCATATCC TGAGTTTAC TTCCTTATGG CTGCCCCTCC AAGTTCTCTC TCTCATACAC 360
 ACACACACCC TTGCTCCAGA ATCACCAGAC ACCTCCATGG CTCCAGCTAT GGAACAGCT 420
 GCATTGGGGC TGCTTTCTG TTGGCTTAG GAACTTCTGT GCTTCTGTG GCTCCACTCG 480
 35 CGAGGCAGCT CGGAGGTGTG GACTCCGATT GGGCTGCAGG CAGCTCTGGG ACGGCACAGG 540
 GCGGGCGCTC TGATCAGCTC GTGTAAAACA CACCGTCTTC TTGGCCTCCT GGCAGTTCTT 600
 40 TCTGCGAATA GTCCTCTCCC TGGCCAGTTG AATGGGGGAA GCTGCTGGCA CAGGAAGGAG 660
 AGGCGATCCC GGCTGAGGCT TAGGAAATG CTGGAGCCGG CTCCAAGCAG ATAATTCACT 720
 GGGGAGGTTT TCAGAGTCAA ACATCATTTCT GCCTGTRTTG GGGGCCAGGT GTGTCACACA 780
 45 AGCATCTCAA AGTCAAAAGC CATCTGGGGC TGCTGCTTCT CTTTCTCAGG CTCTGGGGAA 840
 AGGAATCTCC CTCTCCTCTC ACTTGATTC AAGTGTGGTT GAATTGTCTG GAGCACTGGG 900
 50 ACTTTTTTTC TCTTTTCTT GATGGACCAA CAGTGCAAAT GCAATCTCGC CATTTAACTT 960
 TCAGGTCGAT TTCTTTCTT GATCAGACAT CTTGTGCCC CTTTAGGAA GGAAAAGAAT 1020
 ACACCTACGA TGTGCCAGGC ACTGTGTTAG GCGCTTTTAT ATAGATCCTC GTTAGGATGA 1080
 55 GACTAAGGGA TGAGGACATC TCTTTATAAA AGGCCCTAA GTAATGGATA AACAGAAACA 1140
 CTTAGAGGTG AGAAGGTCTG TCTCAAGAT CCAAGGTAAG ATTGCCTTCA GTCTGATGTT 1200
 60 TGTCTCAAG GACTTATCCC CTACAATATT CTCCACTCC ATACTTCTCC TTCTACCCCA 1260

5 CCATGTGCTC CCGTGCAC TC CAGATGGT CAGAGGGGTA ACCCAAGTCC TTAGAGAATT 1320
 TGGGGACCAA TAGAATATGT GATGTGTGAA TTTTCTTTAA AAAACTTAAG GAGTCTTTGC 1380
 TACCTTCTGC TTGTTGAGTT GTTTTGGCAT TCATATTAAA AGCCAGCATC TCACTATTTA 1440
 TTGACAGGTT GGGCTGTGTG TGTGCGCATG TGTGTATACA TTTCCAGGCG TGCCTGTGTC 1500
 10 CTGTAGCTTT TTAAGGAA ACCCAGTCAT CCCACTATGA ATCTGGCATC TTCTTATGCT 1560
 TCTAGTGT TT TGGCCATACA TCAACCAAGG GGTTAATTT ATCCAATGCT TGACGACATG 1620
 TTCAGGAGGG GCTGGATCAA ATTTTGAGAG GGTATGGGA AAGGGAGGGG GAGAAGAAAT 1680
 15 TGACATTTAT TTTATTATTT ATTTTAAATG TTTACATCTT CTTTATGTG TATCAAGCCT 1740
 GAATAGAAAC TGATAGCATT AAAATACTCC GTTCTCTCT CTCTTCTCGC TTCTTTTTTT 1800
 20 TTTTTTTTTA AATTTAGGAT AACACATTTT TGTTCCTAAA GTGATTGTG ATTTGTGCTG 1860
 TATAAACTGT ATAAAAGGTT CTGTTTTTAA AGGTGGATT TCATTCCTCT GGGGACAGTG 1920
 25 GTCGCCAAGA CATCTACATT GTAAGAGAAC ACAGTGAAG ATCCTGTCCT GATTCTCAAA 1980
 AATTATTTTC TCTGTATGAT TAAAAGT 2007

30

(2) INFORMATION FOR SEQ ID NO: 136:

(i) SEQUENCE CHARACTERISTICS:

35

(A) LENGTH: 1291 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 136:

40

CTTTAACCC TCCCCCTCA CACACATACA TATCAGGTG TTTTCTAGTT AAAAACCCAA 60

GTAGCTCAGA TTCTACTTTA ATGTCAGTGC AGATTGTCAT TGAATCATGC CATTATGTTT 120

45

TTTCTCATTT TTATGCTGTT GGGTCTTAGT TTTTAAATG ATATAAGAA CTCAGCAATG 180

GTTTTATTTT CTAATCATAC TTAGGGTTTA GGAAACACTA CCACTAGTTA TCATTTAATC 240

50

AACTTCAATG GTCTACTGAA ACAAAAATGG TAACTTTTCA TTAGTGGATT ATTTAGAGTT 300

ATAGTAGTTG TTTCAGAAA ACACTTCCTC ACAATTGTAC TTCCCAATCA AATCATGTGA 360

TCATACAGTT ATTCCCATGA AAGGCAGAAAT GTTGTTTTCA AAATTAATCT AGTTTTCTGT 420

55

ACATTTAAAT TTGAGAAGGT GACAACTGGC TCTTTTCCAG TCTTCCTTCA TGTCAAGTTT 480

CTGATAGACC ACTATTGGCA AACAGTATCT GTCAACTACC AAATGTGTAA AATTTTCTGT 540

60

ATTTCACTTT GTCTTATTTG TAAATAGTGA ACTAAAAC TTGGCAGATC AGCAACATTT 600

GCTGAGCCTG TTTTTTAAGC TAATGTGTAT TCTTACTAAT GTTCCTATCA AGAATGGATT 660
 TGTAATATAT GCTGTCTATT TCTAATGTTT ACATTTCATAT TTTGAGGTTT TATCTTATTT 720
 5 TAATAGAGAA CAGACTTCTC AAAAAATCTT CAGAAGCAGC TTATTATTGA AATATCGAAA 780
 TATTGAAATA AACCCGGTGG GTTAGATTAC TCATCTGTCC ACCAAGTGGG ACATTTGCAT 840
 10 GGACTGGGGG CTTAAAGGAC TTAGAAGAGA CCTGTAAGTA AATCCTGAAA ATGAGCCAAT 900
 CCCCACCTGA ATGGTTACTG GAGTAAACCC ACCTTTACCA CCCCAATTAC AGCACCOCGAG 960
 GCCGATAAAC CAACTTGGCT CTGGTTTATT TTTCTTTTCT TCATTTGTGA TGCTCAGATT 1020
 15 CAAAATGTGT GTTCTACACT GTTACAGGCT TCTCTTTTGT TTGATTAAAG ATTTTAGTCC 1080
 TACTTTTGTA TGGACACATT AGAATATTCA GAGACCAAAA TAGAAGAATT TGCTGTTAGA 1140
 TATTTTTCAG AAGTCAGCAG ATTTGTGGCA AATCATTTAT TTGCCTTTTT AAAAAATTCAT 1200
 20 TTAAGCAGTT CAGAGAGTAG ACTACTCAGA AAATTATTTT ACGTAATTGT CTAAGAGGTC 1260
 AATATTTTTT AATGCATATT GAATCAAATA A 1291

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(2) INFORMATION FOR SEQ ID NO: 137:

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- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1906 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 137:

GGCACGAGGA CCTACTTTTG TAACAGACCA TGGTTGTGTC CAAGGTAAAA CCACAGTGAT 60
 40 ATTTTGTGGAT GCTTTGTCTG CAATCTTGAC TTGTTTTTGC AGTATCATTA TTCAGACTTC 120
 AAATTGTGAA TCTTTTAAAC ATCTTGATAA TTTGTGTGTTG AGAGCTGTTT ATTCTAAAAT 180
 GTAATGAAAT TCAGTCTAGT TCTGCTGATA AAGATCATCA GTTTTGAAAG GTTACTGATT 240
 45 TTCCTCTTCC CTCTTAGTTT TTTACCCAAT ATATGGAGAA GAGTAATGGT CAATCTTAAC 300
 ATTTTGTTTT AATTGTTTAA TAAAGCTGCT GGGCAGTGGT GCAGCATTC CACCTAGTGT 360
 50 CATAAAAGCA AAATACTTAC ATAGCTTTCT TAAAATATAG GAATGACATT ACATTTTATAG 420
 GAGAAAGTAA GTTGCTTTGC ACCGCCTACT TAATTCCTTT CCATATATTG TGATACAAAC 480
 TTTTGAATAT GGAATCTTAC TATTTGAATA GAAATGTGTA TGTATAATAT ACATACATAC 540
 55 ATAAGCATAT ATGTGTGTGT GTGTGTGTAT ATATATATAT ATGCATGCTG TGAAACTTGA 600
 CTACACAACA TAAATCACTT TTTAAATTC AGGAACGGGT AGTCTGACAC GGTGATTATC 660
 60 CTTTGTAGGC TGAATCCGTT ATTAACCTGT TATTTAGGTT TTAATCCCAG TAGCAAGGGA 720

	TTCTAAGTTA GTTGCACTTA CATGATTATT GTGATTTAAA ACTAAGAATA AAGGCTGCAT	780
5	TTTCAAAGAT AAATIGGAAT TGCTGTTGGT GAAATAACAA CCAAATACT GAATCTGATG	840
	TACATACAGG TTTCTACAGG AAGAGATGGT ATAATTTACA ATTTGGAGAT TTAATAACCA	900
	GGGCTACCCA GAAAAAGTGA CTTGATAACA TGGTACCAAT AAGTAAGGGA TGCTCTCTCG	960
10	GTTTGCTTTT GCCACTTTCA AGATTTTAAAC TTCTCAGGTT ATTAATCAAA ATTATTGTAT	1020
	AAGTTAGCCA ATAGAATTTT TAGGTTAAAA CAACAGATGG GGGGTTTGIG GAGTGTTTAA	1080
15	TGTCATGGGC ATTTTGTAGTA GCATAGACCC TTTGTTCTGC ATTTGAATGT TTCGTATATT	1140
	TTTGTTCAC AGTTAATCTT CCCTCCCCAA GTTGCTATT CAAATCAACT GCCTGAATGA	1200
	CATTTCTAGT AGTCTGATGT ATTTTCTGA GGAATAGTTT GTGATTCCAA TGCAGGTGTC	1260
20	TTCAATTACCA TTACCTCTAC ACTGCAGAAG AAGCAAACT CCTTTATTAG AATTACTGCA	1320
	CATGTGTATG GGGAAAATAG TTCTGAAAGG CTAGAATGAT ACAAGTGAGC AAAAGTTGGT	1380
25	CAGCTTGGCT ATGGAGTGGT GGCAATAATC TCTAAACATT CCAAAGACC ATGAGCTGAA	1440
	CCTAAACTCC CTTGGGAATC TGGAACAAAG GAATATGAAA ATTGCCATTT GAAAAC TGAC	1500
	CAGCTAATCT GGACCTCAGA GATAGATCAG CCAGTGGCCC AAAGCCATTT CAAGTACAGA	1560
30	AATTATAGAG ACTACAGCTA AATAAATTG AACATTAAAT ATAATTTTAC CACTTTTGT	1620
	CTTTATAAGC ATATTTGTAA ACTCAGAACT GAGCAGAAGT GACTTTACTT TCTCAAGTTT	1680
35	GATACTGAGT TGACTGTTCC CTTATCCCTC ACCCTTCCCC TTCCCTTTCC TAAGGCAATA	1740
	GTGCACAACT TAGGTTATTT TTGCTTCCGA ATTTGAATGA AAAACTTAAT GCCATGGATT	1800
	TTTTTCTTTT GCAAGACACC TGTTTATCAT CTGTTTTAAA TGTAATGTGTC CCCTTATGCT	1860
40	TTTGAAATAA ATTTCTTTT GTAAAAAAA AAAAAAAA AAAAAA	1906

45 (2) INFORMATION FOR SEQ ID NO: 138:

(i) SEQUENCE CHARACTERISTICS:

- 50 (A) LENGTH: 1935 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 138:

55	TCTGAACTAA TGCTAACAGA TCCCCCTGAG GGATTCCTGA TGGGCTGAGC AGCTGGCTGG	60
	AGCTAGTACT GACTGACATT CATTTGTGATG AGGCAGCTT TCTGGTACAG GATTTCTAAGC	120
60	TCTATGTTTT ATATACATTT TCATCTGTAC TTGCACCTCA CTTTACACAA GAGGAACTA	180

	TGCAAAGTTA GCTGGATCGC TCAAGGTCAC TTAGGTAAGT TGGCAAGTCC ATGCTTCCCA	240
	CTCAGCTCCT CAGGTCAGCA AGTCTACTTC TCTGCCTATT TTGTATACTC TCTTTAATAT	300
5	GTGCCTAGCT TTGGAAAGTC TAGAATGGGT CCCTGGTGCY TTTTACTTTT GAAGAAATCA	360
	GTTTCTGCCT CTTTTTGGAA AAGAAAACAA AGTGCAATTG TTTTITACTG GAAAGTTACC	420
10	CAATAGCATG AGGTGAACAG GACGTAGTTN AGGCCTTCCT GTAAACAGAA AATCATATCA	480
	AAACACTATC TTCCCATCTG TTTCTCAATG CCTGCTACTT CTGTAGATA TTTCAITMCA	540
	GGAGAGCAGC AGTTAAACCC GTGGATTTTG TAGTTAGGAA CCTGGGKTCA AACCTCTTC	600
15	CACTAATTGG CTATGTCTCT GGACAAGTTT TTTTTTTTTT TTTTTTTTAA ACCCTTCTG	660
	AACTTTCCT TTTCTATGTCT ACCTCAAAGA ATTGTTGTGA GGCTTGAGAT AATGCATTTG	720
20	TAAAGGTCT GCCAGATAGG AAGATGCTAG TTATGGATTT ACAAGGTTGT TAAGGCTGTA	780
	AGAGTCTAAA ACCTACAGTG AATCACAATG CATTTACCCC CACTGACTTG GACATAAGTG	840
	AAAAC TAGCC AGAAGTCTCT TTTTCAAATT ACTTACAGGT TATTCAATAT AAAATTTTTG	900
25	TAATGGATAA TCTTATTTAT CTAACTAAA GCTTCCTGTT TATACACACT CCTGTTATTC	960
	TGGGATAAGA TAAATGACCA CAGTACCTTA ATTTCTAGGT GGGTGCCTGT GATGGTTCAT	1020
30	TGTAGGTAAG GACATTTTCT YTTTTTCAGC AGCTGTGTAG GTCCAGAGCC TCTGGGAGAG	1080
	GAGGGGGGTA GCATGCACCC AGCAGGGGAC TGAAC TGGGA AACTCAAGGT TCTTTTACT	1140
	GTGGGGTAGT GAGCTGCCTT TCTGTGATCG GTTTCCTAG GGATGTTGCT GTTCCCCTCC	1200
35	TTGCTATTCTG CAGCTACATA CAACGTGGCC AACCCAGTA GGCTGATCCT ATATATGATC	1260
	AGTGCTGGTG CTGACTCTCA ATAGCCCCAC CCAAGCTGGC TATAGGTTTA CAGATACATT	1320
40	AATTAGGCAA CCTAAAATAT TGATGCTGGT GTTGGTGTGA CATAATGCTA TGGCCAGAAC	1380
	TGAAACTTAG AGTTATAATT CATGTATTAG GGTTCCTCAG AGGGACAGAA TTAGTAGGAT	1440
	ATATGTATAT ATGAAAGGGA GGTATTTAGG GAGAACTGGC TCCCACAGTT AGAAGGCCAA	1500
45	GTCGCACAAT AGGCCGTCTG CAAGCTGGGT TAGAGAGAAG CCAGTAGTGG CTCAGCCTGA	1560
	GTTCAAAAAC CTCAAAAC TG GGAAGCTGA CAGTGCAGCC AGCCTTCAGT CTGTGGCCAA	1620
50	AGGCCAAGAG CCCCTGGCAA CCAACCCACT GGTGCAAGTC CTAGATTCCA AAGGCTGAAG	1680
	AACCTGGAGT CTGATGTCCA AGAGCAGGAA GAGTGAAGA AAGCCAGAAG ACTCAGCAAA	1740
	CAAGGTAGAC AGTGTCTACC ACCAYAGTGG CCATACCAA GAGGCTACCG ATTCTCTCCT	1800
55	GCTACCTGGA TCCCTGAAGT TGCCCTGGTC TCTGCACCTT CTAAACCTAG TTCCTAAGAG	1860
	CTTTCCATTA CATGAGCTGT CTCAAAGCCC TCCAATWAAT TCTCAGTGTA AGYTTCAAAA	1920
60	AAAAAAAAA AAAAA	1935

(2) INFORMATION FOR SEQ ID NO: 139:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1446 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 139:

5 NGCCCCCTTG GCACAAGTCA GATGAAGCAC GTTCTGCCGG GGAGGCCCTC AMCTTCCAGA 60
 15 GAGGACAGAC ACAGATTTC TCTGCGGGA GGGAGGAGTC CACGCATCCT GATGCTGCCT 120
 GGAAGCTTAT TTTCCTGTGG CCAGGATGCA TTCTCTGAG TGGAAACAGG TTCTTGCATG 180
 20 TGGATGTGTG TTTCCTCAGG CAGACGGCCC CTCTYTTCCC AGCACTTCCC TGCCTCCCCC 240
 AGGCCTCAGG CCAGCACCCA GTTCTCTCTC ACATGGCAGG TGAGCACAGA CTTCTAGTTG 300
 GCAGGAGCTG AGGAGGGTGA ACAAACCCG AGGGAGGCCC GGCCCTTGCT CCCGAGTTGG 360
 25 GGGGAGGGGG TGTGGCAACG TGCCCCCGC AGAGGCCACG CATGTTTGAC CAAAGCCCTC 420
 ATTGTGGTCC GAGGACAGCC TTTTCCCCAG GCCTCARAGC ATTGCTCATC CGTGCCAAAC 480
 30 TGGGTAGGTG GATTTGAGCG GAAAGACTCC CAAAATGTGC CAAGAATTTT CCRGTCCCAG 540
 GCAGGGCAGG GGAAACTAAG GGCAAGCAGG ATACAGGGCG AGGGATGTGG CAGGTGAGGG 600
 GGCTCCCGCC TGTGCCCTT CTCTCACCA TGTCTCCCC ACCCTGCCTC AGTTCTCCGT 660
 35 TCCCTTTCAT CTCCGTCCCC CTCTTTGAAG CTGTCCCAT CTCAGTGTCA GACCAGCCTT 720
 CTCTCAKCT GACCACCTC CTCTGACCSA CGCCCCCTCC TTGTCTGAAA AAAGGAGCCT 780
 40 TGAATGGTGG AGGAGGCAG TGGGGAGAAA GGTCTACCG GACAGGTTGG GAGAATGAGG 840
 TCAGCGTGC TGGGAACAG ATGGAGGGG CAGTGGGAC AGGGCTTGGG CAGACACCAG 900
 CAGGAATAAT TTGAAATGTG TGAGGTGACT CCCCAGGAGC CTTGGGCTTG GGCATTTGGG 960
 45 AAAAGAATGA TGTCTGGAAG GGCTTAAGG ACACAGTGA CGAGGGGAGA GTCCTCATCT 1020
 GCTGGCATTT TGTGGGTGT TAGTGCCAAA CTGAATAGG GGCTGGGGTG CTGTCTTCCA 1080
 50 CTGACACCCA AATCCAGAAT CCCTGGTCTT GAGTCCCAG AACTTTGCCT CTTGACTGTC 1140
 CCTTCTCTTC CTACCTCCAT CCATGAAAA TTAGTTATTT TCTGATCCTT TCCCCTGCCT 1200
 GGTCTAGCTC CTCTCCAAAC AGCCATGCCC TCCAAATGCT AGAGACCTGG GCCCTGAACC 1260
 55 CTGTAGACAG ATGCCCTCAG AATTGGGGCA TGGAGGGGG GSTGGGGGAC CCCATGATTC 1320
 AGCCACGGAC TCCAATGCCC AGCTCCTCTC CCAAACAA TCCGACAAT CCCTTATCCC 1380
 60 TACCCCAACC CTTTGCGGCT CTGTACACAT TTATAACCT GGCAAAAGAT GAAGAGAATA 1440

TTGTAA

1446

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(2) INFORMATION FOR SEQ ID NO: 140:

(i) SEQUENCE CHARACTERISTICS:

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(A) LENGTH: 1109 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 140:

TTTTTTTTTT	TTTGATATGA	AATTGTCTTT	CTCCATTGCA	GAAATAAGCT	AGGGAAACAC	60
TAACCCAAAA	ACTTTCGTGA	GAGCTGTTC	TTTGAGGCA	GCATCACTTA	TTGGCAGTAA	120
AGACTCAGTA	TAAAGCACC	AGCATCCCTA	CTTGGGTGAT	GGGGATTAAT	TTTATAGCAT	180
TCCATTTTCC	TAGTGCCACA	TGTGAAATG	GATTTTGATG	ATCTTAATCT	ATATCTTACC	240
CTTATAATAA	AAGATCAAAA	GATATATCTC	CTATGAACAG	ATTGGAGATA	GGAGATGAAA	300
AGTTGGGAGG	ATGCTTTTAT	TCTAATGTGA	GGTAGGGAA	AATGTGGATA	ACATTACTGG	360
GGTGARGGAG	GCATTGTTCT	TTAGTTGGAG	TTCTCATTTT	TATCTCCAG	TACTGACTTG	420
TGGGAAAGC	ATACTTTTTC	ACTGCCAGGT	ACTGAATCCA	GAGGCTCAGT	GAAGTATATA	480
TGTGGGAAGT	GCATGCATTT	CGTTTATTAG	CAAACATAGC	TGGATTAAGA	CAAAGTTGTT	540
GGTTTGAAA	GGGTTAAAG	CCTTAAGTGA	ACAAATCTAG	CTAACAGTGA	ATGAACTAGG	600
TAATATAACT	TGCATATTTT	TAATTTCCCT	TGGTTAAAGG	TCCCCCATA	TTCTCTGTTC	660
GGAGACATGA	GAAGTATGAT	TACTTCAGTG	TTAGTTTCT	TAATTTTTTT	TTTCCCCTAT	720
TTGTCCCTTG	TCACTTTGTT	GCAAGCTAGA	AATCTGTGGG	TTATACATAG	GGCAGCTCTT	780
TGTGAAAGTG	GTTTATTCCA	CTGGAGAAAG	GGGATGAAA	ATCAGTTAGA	ACCAATGTAT	840
TTCTTGCCCC	ACGGAACACT	ATTCTTATAA	GATAGCTGAA	AGAAGCTGCT	GTGAGGAGCT	900
CAGCTCCAAA	CACAGGATCA	GCACCTTGTA	TAGGAATTCC	CATGAATTAT	GACTTCTCAT	960
TCTGTTTAT	CAGAGTGCAT	ATATGTCCTA	CTTCAGGAAA	AGTAAACAG	TCATTTACGA	1020
AAGAAAGTCA	ATCTGTATCC	TAAGCATTTT	AATAAAAAGT	TAAAACAAA	AATTAAAAGG	1080
GACACTCGAG	GGGGGGCCCG	AAACCCAAT				1109

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(2) INFORMATION FOR SEQ ID NO: 141:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 497 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 141:

TAGGACTAAC TTAAATTCCTT TTATTCATCT TTTATTTATT AAAAAATTTT ATTTCTTTGA 60
10 ATTTTCCTGT AATTTCCCTTA RGCTCTTCTA TAAAATGTTA TATTCATGTG AACCATACCT 120
CATTATCCTT AACATTTACT CTCAAAAAGC TTTTATTTTT TATTTTMTTG AAGGTAGTTT 180
15 TTCTGTGTGT ACTCTGTAAC ATGATTTTGC TTTCAAATCA TTGTTGTGCC CCCATACAAA 240
ATGCCCTTTTA TTTTIGAGGA TCGTGGACTT TTTAGTATGG CATGAGTGTG CTAAAAGCCA 300
GATATCTTTC CACATTCACT GGTGGCTTTG ACACCTAGTT TTTAATCTCC CATCCTTACT 360
20 TTAAACCCGT ACAGTGCAGT CCTCAGTCAG GGCCAGGACC GGGCTGAGGC CCTTTGTGGA 420
GATGCTGCAC CACCAGCAGA AGGCTGAGAC CTGGTTACCT GTACCTGTTT ACTTGTAATA 480
AAAAGAATTA TCTAAAA 497
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(2) INFORMATION FOR SEQ ID NO: 142:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 269 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 142:

ATGAGGCAGA GGCAAGCTGC CTGCCAACCC CCTCCCTCAA GGAATGGCCT TGCCCAGGAA 60
40 TGCCCACCAC ACATACCCTC TTCTTTTTTT CTAGTCAAAC TCTTGTATAT TCCTTGGCTT 120
GCCTCCCTCC TTTCCTCCCC TCTCAACCTT TTAATCTTGG TTTCTATTTT ATGGGATTTG 180
45 GGGTTGAAGT TAAACTTACA ACAGTGCCGC CAACACCAAG TCTTGCAGGA AAAAAATACA 240
AAGAAATTTA ACAAAAAAAA AAAAAAAA 269

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(2) INFORMATION FOR SEQ ID NO: 143:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1269 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 143:

	TTGATTGACT ATGGTCTCTC CGGCTACCAG GAAGAGTCTG CCGAAGTGAA GGCCATGGAC	60
5	TTCATCACCT CCACAGCCAT CCTGCCCTTG CTGTTGGGCT GCCTGGGCGT CTTGGGCTC	120
	TTCCGGCTGC TGCAGTGGGT GCGCGGAAG GCCTACCTGC GGAATGCTGT GGTGGTGATC	180
	ACAGGCGCCA CCTCAGGGCT GGGCAAAGAA TGTGCAAAAG TCTTCTATGC TCGGGTGCT	240
10	AAACTGGTGC TCTGTGGCCG GAATGGTGGG GCCCTAGAAG AGCTCATCAG AGAACTCACC	300
	GCTTCTCATG CCACCAAGGT GCAGACACAC AAGCCTTACT TGGTGACCTT CGACCTCACA	360
15	GACTCTGGGG CCATAGTTGC AGCAGCAGCT GAGATCCTGC AGTGCTTTGG CTATGTGAC	420
	ATACTTGTC ACAAATGCTGG GATCAGCTAC CGTGGTACCA TCATGGACAC CACAGTGGAT	480
	GTGGACAAGA GGGTCATGGA GACAACTAC TTTGGCCAG TTGCTCTAAC GAAAGCACTC	540
20	CTGCCCTCCA TGATCAAGAG GAGGCAAGGC CACATTGTGC CCATCAGCAG CATCCAGGGC	600
	AAGATGAGCA TTCCTTTTCG ATCAGCATAT GCAGCCTCCA AGCAGCAAC CCAGGCTTTC	660
25	TTTGACTGTC TGCCTGCCGA GATGGAACAG TATGAAATTG AGGTGACCGT CATCAGCCCC	720
	GGCTACATCC ACACCAACCT CTCTGTAAAT GCCATCACCG CGGATGGATC TAGGTATGGA	780
	GTTATGGACA CCACCACAGC CCAGGGCCGA AGCCTGTGG AGGTGGCCA GGATGTTCTT	840
30	GCTGCTGTGG GGAAGAAGAA GAAAGATGTG ATCCTGGCTG ACTTACTGCC TTCCTTGGCT	900
	GTTTATCTTC GAACTCTGGC TCCTGGGCTC TTCCTCAGCC TCATGCCTCC AGGGCCAGAA	960
35	AAGAGCGGAA ATCCAAGAAC TCCTAGTACT CTGACCAGCC AGGGCCAGG CAGAGAAGCA	1020
	GCACTCTTAG GCTTGCTTAC TCTACAAGG ACAGTTGCAT TTGTTGAGAC TTTAATGGAG	1080
	ATTTGTCTCA CAAGTGGGAA AGACTGAAGA AACACATCTC GTGCAGATCT GCTGGCAGAG	1140
40	GACAATCAAA AACGACAACA AGCTTCTTCC CAGGTGAGG GGAAACACTT AAGGAATAAA	1200
	TATGGAGCTG GGGTTTAAAC CTAAAACTA GAAATAAACA TCTCAAACAG TAAAAAATAA	1260
45	AAAAAAAC	1269

(2) INFORMATION FOR SEQ ID NO: 144:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1944 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 144:

AAAAGGCAAA CTATAGGATA ACACAGAGCC CTTTTTGAAA ATAAATTGGC ATTGGAGTGT 60

	TTTACCCTCT AGCTGTTTTA CTTAGAATGT AACATATGCT GCCTACCCAC CTCAAAATGT	120
	CTGTACTGCA AGAGGGCCCT GGGCCTCTGC TTTCCATATT CACGTTTGGC CAGAGTTGTA	180
- 5	GTCCCAAAGA AGAGCATGGG TGGCAGATGG TAGGGAATTG AACTGGCCTG TGCAATGGGC	240
	ATGGAGCACA AGGGGTCACA GCATGCCTCC TGCCTTACCG TGGCAGTACG GAGACAGTCC	300
10	AGAACATGGT CTTCTTGCCA CGGGGTGTTG TTGTCCTGG TGGTGCTGCA TGTCTGTGGC	360
	TCACCTTTAT TCTTGAAACT GAGGTTTACC TGGATCTGGC TACTGAGGCT AGAGCCCACA	420
	GCAGAAATGGG GTTGGGCCTG TGGCCCCCAA ACTAGGGGGT GTGGGTTCAT CACAGTGTG	480
15	CCTTTTGTCT CCTAAAGATA GGGATCTACT TTTGAAGGGA ATTGTTCCCTC CCAAATAAAT	540
	TTGCTTTACC TTGGTCCTTT CTTTTGTGCC AGTATTCAAG TGGTATAGCT CTGAGCAGGG	600
20	TCACATTTGG CCAAACCTGA CACTGTCTTG CTGCATTCTC CTTTGGCAAA CATCAGGGTC	660
	AGAATTCAGG ATAGCCCTTC CTAGGCACT GGACTTTCTG GCATGGGGGC TGTGTTTGCA	720
	CAAGTTATTT TCATGTTACC TGGAGAGTGT CCAGAGGCTG CTCTGAGGCT GAGGTGTGTT	780
25	CCCCCTTGCC TGGTTCCAGC TGTGAGAGG ATACCATCCT AGGGTCTGGG AATCCAAGGC	840
	CACGAGACTC CTTGGTTTGT GGTCCGAGAT CCTGTACTAA GGAGGGTCTG GCCAGAGGAA	900
30	CAGACCAGCT TTTGCACAAT GAAGCGCAAG GGAACAAGTG GTTTGCCTGG TGTCTTACCT	960
	GTCCTGAACC TGGTCCTGTG GGCCATTGAA AAGTTAGATC TGTGATCTCT GGGGTTTTTG	1020
	TGGCTTTGTT CAATGCTTCC ACTCTAGGGC AGGCAGAGCA GTCTATACTC TCCCAAGCCT	1080
35	GCTTGACCTC CAAGTAGAGC TGATACAGAG ATCTGTGAAT ATTGTGATAG AAATTCTTTG	1140
	GTATTCATAC ATTTTACGCTG CAAGTCAGCA ATTTCCAGG TACCATGTAA GCTATAAAAC	1200
40	AGTCATTCTT AAAGACAGAG GATAGCTGTG ACTCATGGGA TCATGAGGTC CATGGCTGGT	1260
	TGCAGGTTCC CTTTTTCCTT CCTCAGGTTT TGTCTCTTCC TGTGTTGTCC CCAGCAAGGG	1320
	AGAGACTGTG GGGTGGATTG GGAGAACAGA TTAGGAGTAT AGCAAATGAA CCCAGAATGG	1380
45	AACAGTGGGG AGCTAACTGT GAATGAGGAG AGTACCTGCT GCAGGACCTG GAGGTCAGGT	1440
	GTGAATGCTG TATTGGCACA GGAATAAAT ATCCTGGCGT CTGGAGCCTT CACCTCTCCG	1500
50	TCAAGTCCTT CCTGTGATAC TGCCATGGCA CAGGATCTGA GTTGCACTC TGCACCCTAA	1560
	ATCACACCTT GGCATGTGTC TGGGCTGCAG GGCTGCCAGG TTCTGTACTT GTGTCCAGCT	1620
	GTGGCCCTGG ATGCTGGAGC TGGAGGGTTT TCTGTGCTCA GACTGTAGCC TGTAGCTCTT	1680
55	GGCCTGTGTA GAGCCCCCTC CTGTGCCCTC AGTGGCTGTC GTTTGTAAAC ATCATCAGGA	1740
	AGATGGGAAA GGTGAGGCAG AATTTTCTG CCCTACAAAG GGTGGAAGAG AAAGGACACA	1800
60	GTATTTTCAT GAATTTACCA TATATCTTTG TTTTCTTCA ACGAAAAAGT TAATTGAGGC	1860

AATGTCATCT GCTCAAAGTT GAGTGGTTTA TTCACAATAA ACTGTAAGTT TCTGATTATA 1920
 AAAAAAAAAA AAAAAAAAAA AAAG 1944

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(2) INFORMATION FOR SEQ ID NO: 145:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1021 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 145:

TCGACCCACG CGTCCGGGGT GCGCAACGGG GAGTTCGGC TGGAGACCCG TGCTCTGGGC 60
 20 CGGCGCCTTC ACCATGGCCT CGGCAGAGCT GGACTACACC ATCGAGATCC CGGATCAGCC 120
 CTGCTGGAGC CAGAAGAACA GCCCCAGCCC AGGTGGGAAG GAGGCAGAAA CTCGGCAGCC 180
 25 TGTGGTGATT CTYTTGGGCT GGGGTGGCTG CAAGGACAAG AACCTTGCCA AGTACAGTGC 240
 CATCTACCAC AAAAGGGGCT GCATCGTAAT CCGATACACA GCCCCGTGGC ACATGGTCTT 300
 CTTCTCCGAG TCACTGGGTA TCCCTTCACT TCGTGTPTTG GCCCAGAAGC TGCTCGAGCT 360
 30 GCTCTTTGAT TATGAGATTG AGAAGGAGCC CCTGCTCTTC CATGTCTTCA GCAACGGTGG 420
 CGTCATGCTG TACCGCTACG TGCTGGAGCT CCTGCAGACC CGTCGCTTCT GCCGCCTGCG 480
 35 TGTGGTGGGC ACCATCTTTG ACAGCGCTCC TGGTGACAGC AACCTGGTAG GGGCTCTGCG 540
 GGCCCTGGCA GCCATCCTGG AGCGCCGGGC CGCCATGCTG CGCCTGTTCG TGCTGGTGGC 600
 CTTTGCCCTG GTGGTGGTCC TGTTCACGT CCTGCTTGCT CCCATCACAG CCNTCTTCCA 660
 40 CACCCACTTC TATGACAGGC TACAGGACGC GGGCTCTCGC TGGCCCGAGC TCTACCTCTA 720
 CTCGAGGGCT GACGAAGTAG TCCTGGCCAG AGACATAGAA CGCATGGTGG AGGCACGCCT 780
 45 GGCACGCCGG GTCTGGCGC GTTCTGTGGA TTTCGTGTCA TCTGCACACG TCAGCCACCT 840
 CCGTGACTAC CCTACTTACT ACACAAGCCT CTGTGTCGAC TTCATGCCGA ACTGCGTCCG 900
 CTGCTGAGGC CATGCTCCA TCTCACCTCT GCTCCAGAAA TAAATGCCTG ACACCTCCCC 960
 50 ACAAAAAAAAAA AAAAAAAAAA ACTCGAGGGG GGGCCCGGTA CCCAATTCCG CCTATAAAGG 1020
 T 1021

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(2) INFORMATION FOR SEQ ID NO: 146:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1285 base pairs

(B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 146:

	GGCACCAGGA GGGCCACGGC AGCCATCGCG CTTTGCAGTT CGGTCTCCTG GTGTACGGCC	60
	AACGCCAAGT AGGGGATTGC GTTCCCTCCA GTCGCAGACC CTATCAGATT TGGATATGTC	120
10	CTTCATATTT GATTGGATTT ACAGTGGTTT CAGCAGTGTG CTACAGTTTT TAGGATTATA	180
	TAAGAAACT GGTAAACTGG TATTTCTTGG ATTGGATAAT GCAGGAAAA CAACATTGCT	240
15	ACACATGCTA AAAGATGACA GACTTGGACA ACATGTCCCA ACATTACATC CCACTTCCGA	300
	AGAACTGACC ATTGCTGGCA TGACGTTTAC AACTTTTGAT CTGGGTGGAC ATGTTCAAGC	360
	TCGAAGAGTG TGGAAAACT ACCTTCCTGC TATCAATGGC ATTGTATTTT TGGTGGATTG	420
20	TGCAGACCAC GAAAGGCTGT TAGAGTCAAA AGAAGAACTT GATTCACTAA TGACAGATGA	480
	AACCATTGCT AATGTGCCTA TACTGATTCT TGGGAATAAG ATCGACAGAC CTGAAGCCAT	540
25	CAGTGAAGAG AGGTTGCGAG AGATGTTTGG TTTATATGGT CAGACAACAG GAAAGGGGAG	600
	TATATCTCTG AAAGAACTGA ATGCCCGACC CTTAGAAGTT TTCATGTGTA GTGTGCTCAA	660
	AAGACAAGGT TACGGAGAAG GCTTCGCTG GATGGCACAG TACATTGATT AACACAACT	720
30	CACATTGGTT CCAGGTCTCA ACGTTCAGGC TTA CTCAGAG ATTTGATTGC TCAACATGCA	780
	TAACTTGAAT TCAATAGACT TTTGCTGGTT ATAAAACAGA TGTPTTTTAG ATTATTAATA	840
35	TTAAATCAAC TTAATTTGAA TGAGAATTGA AACTGATTG AAGTAAGTTT GAGTATCACA	900
	ATGTTAGCTT TCTAATTCCA TAAAAGTACT TGGTTTTTAC AGTTTATAAT CTGACATCAC	960
	CCCAGCGCCA TTTGTAAAGA GCAACTTTCC AGCAGTACAT TTGAAGCACT TTTTAACAAC	1020
40	ATGAACTAT AAACCATATT TAAAAGCTCA TCATGTTAAA TTTTPTATGT ACTTTTCTGG	1080
	AACTAGTTTT TAAATTTTAG ATTATATGTC CACCTATCKT AAGTGTACAG TTAATAATTA	1140
45	GCTTATCAA TGATTGCATG ATGCCCTACA GTTTTCAATA ACTTTTTTTC TTATGCAAAC	1200
	GTCATGCAAT AAAACAACT CTAATGTTTG GCAAAAAA AAAAAAAAAA NTCGAGGGGG	1260
50	GGCCCGTACC CAATTCGCC TAAAG	1285

55 (2) INFORMATION FOR SEQ ID NO: 147:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1386 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 147:

-5	GGCAGCAGGT GCGCAGGGG TCAGTGGTTC TCTCGGGTCT CGGACAGGT GAGCACCTG	60
	ATGAAGGCCA CGGTCTGAT GCGGCACCTG GCGGGTGCA GGAGATCGTG GGCGCCCTCC	120
	GCAAGGGCGS CGGAGACCGG TTACAGGTGA TTTCTGATTT TRACATGACC TTGAGCAGGT	180
10	TTGCATATAA TGGAAAGCGA TGCCCTTCTT CTTACAATAT TCTGGATAAT AGCAAGATCA	240
	TCAGTGAGGA GTGTGGAAA GAGCTCACAG CGCTCCTTCA CCACTATTAC CCAATGAGA	300
	TCGACCCACA CGGACCGTC AAGGAGAAGC TACCTCATAT GGTGGAATGG TGGACCAAAG	360
15	CGCACAACTCT CCTATGTCAG CAGAAGATTC AGAAGTTTCA GATAGCCCAG GTGGTTAGAG	420
	AGTCCAATGC AATGCTCAGG GAGGGATATA AGACCTTCTT CAACACACTC TACCATAACA	480
20	ACATTCCCTT TTTCATCTTT TCTGCGGGCA TTGGTGATAT CCTGGAAGAA ATTATCGAC	540
	AGATGAAAGT GTTCCACCCC AACATCCACA TCGTGTCTAA CTACATGGAT TTTAATGAAG	600
	ATGGTTTCTT CCAGGGATTT AAGGGCCAGC TGATACACAC ATACAACAAG AACAGCTCTG	660
25	TGTGTGAGAA CTSTGGTTAC TTCCAGCAAC TTGAGGGCAA AACCAATGTC ATCCTGCTGG	720
	GAGACTCTAT CGGGGACCTC ACCATGGCCG ATGGGGTTCC TGGTGTGCAG AACATTCTCA	780
30	AAATTGGCTT CCTGAATGAC AAGGTGGAGG AGCGGCGGA NCGCTACATG GACTCCTATG	840
	ACATCGTGCT GGAGAAGGAC GAGACTCTGG ATGTGGTCAA CGGGCTACTG CAGCACATCC	900
	TGTGCCAGGG GGTCCAGCTG GAGATGCAAG GCGCAGGCTN CCAGNCGCC	960
35	TGCAGGCCGT GGTGAGGAGG GGCGCCTCCC CAGAGTCTGC TCCCCCGTGA ACACAGAGCA	1020
	GANGCCAGGG TGGCCAGCAG TGGCTGGGTC CTTCCGCGCC CCTCCGTCCT CCTTTCCCTG	1080
40	AGCACCTTCA TCACCAGAGG CTTGAAGGAA CCCCGCCATG TGGCAGGGCA CAGGCACTGT	1140
	TCCTGGTGAA CCTTGGACCA CAGCATGTCA GTGCTCTAGG GATTGTCTAC TCCAGGGATT	1200
	TTCTTCAAAA TTTTAAACA TGGGAAGTTC AAACAAATAT AATGTGTGAA ACAGATCAAA	1260
45	ATTTTAAAA TGAAAAAAA GCTGCTCTGA TTCAGGGGAT GTGGGTCGGG GTAGAACCTG	1320
	GACCTCTTGG CCTGGGGCA CATGGGATGC TTCTAGGAAC ACAGTTTGAG AACCACCAA	1380
50	AAAAAA	1386

55 (2) INFORMATION FOR SEQ ID NO: 148:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2098 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

60

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 148:

5	AGCCCTTCTC CCCGCGCTTG GGA	CTCTGAC ATCTTAAGGC TGCACGGTCG TGTCTTGTG	60
	TGGGTGAGGC CATGTCTGTG ATCCAAGGTT	CCTGGAAGT ACACAGGAAG GGGCTGTGAA	120
10	CCCTAAGTGG GTGTMATCTC CTCCRACCGA	GGCTTCTMAC CCTGGAGATG GCAGTTACTC	180
	CTGGCCATGG TTGCTGAGCA TGGGCAGACC	AGTGGAGGCC ACCCTACTGT GTTATCTGCG	240
	CCTTCRATGA AGTGAGACCC TTGGGGAGAA	CGGGCTGTGG ATGAAGGAGT GGA	300
15	CTTGCCCTAG CCACTGGGCT GGGATCTTCT	GGGTCAATGT ACTGTGTATC CAGGAGCAGA	360
	AAC	TGTATTTT CAGGAGAACA	420
	GAC	TAGAAA TGGGCTGTC TGGCATTTC	480
20	CTTCTGTGGG TCTACACAAG AAGTTCTTG	TGAGGGCTAT CAGTTGTGTC CTCTAGCTT	540
	GCTGGTAACT TTGGCGCTC CGCCAAGCCC	TGCCAGACTC CCCTGGCTGT GATGGCATTC	600
25	TGTGCCATCC TGCCTGTGCC CCAGCCTCTG	CAGGATGCCC TCCCTACCCA MCTTYCTCTG	660
	GGCCTTCCCT GTCCACTGGG CTGGATTTC	GTTCAAACCA CTGGACTGGC AGGGCAACGA	720
30	CTTCTTCCCA CCTCAAGATG AGGTCTCTCG	CCCCCTGTCT TGGCATAAAA ACACCTTTAA	780
	AGCATGAGCC ATGTGCTTCT TTGCCCTTCT	CTGTCTGTGT CCAATCTTCT GCCTCCAGT	840
	CACTCCCTGG GGA	CTATGGG ATCACTGTCC CCCCACCTGT GTGGCCACAC CATGTGTCTT	900
35	GTCAATCCAG AACTGCCTCT GAGCTCCAGG	CTGACCACAG ATCAGCCACA GCCTGATGCC	960
	TGCAGCCCCA CTTTGCTCAC CCTTCCCCTC	CCCTCCTCCT TCCTTCCACA CAGCAAGCCT	1020
40	ACCTTTYTCC ATCCATGCTC ACCATAGCCC	CCTTCTTGT GACCTGGACC CTCCATTGTA	1080
	CCTGGCTGAG ACTGTGAGCC TCCTGGAGGA	GTGGGGTCCA CCTTCTTCTT GCCCTATGCA	1140
	GTGCAAGCTT CACTTCTCAC CCAGCAAGGT	TGACTCATCT GCCTCCATGT CTCTGGGGCT	1200
45	TTGCTGTTGC CCTGAAACCT AGCTGGGCTG	GTCTTGCTCC CAGCTTGCTT CCCCCTCCTC	1260
	GGATGTCCCT TTGCAGGCCC CTGTGTTCC	TCCGGCACCA GTGTCTTGG CTGCCATGGC	1320
50	AAGCTCATCA GGGGCTTGTA CCCTGGTCAC	CAAGCATGGT AGCAGCTGCC TGCATTGTAT	1380
	CTCCATCTGG TCACTGCAGG TGCCAACCCCT	TCATCCCCCA TGTPTTCTCTG GGCCATGGAG	1440
	GGCTGACCTC CGTTTCTGGG GAATGTGGCT	GAGCTGTGGT AACCAGCTAC ACCCCAGGTG	1500
55	CTCTTTCCAT GGTGGTGCCT GCTCATCTTG	CTGATGCAAA CTAGGAAGTT AGGCTGCATC	1560
	TGGAGTGGC TTTCGCTGGA GAGGTGCTTT	GCTGTCTCTC AGACTCAGTC ACTGTGTGCC	1620
60	CTCCCCGCCT CTCTTATCTC CATGGCTGTT	TGCAGCTCTC CCAGGTACTT TGGGGTCTGA	1680

GCTGGAATTC CTMTGTGGTT TGCTCTTCTG CTCTCACTC TTGTATTAAG AAGGATTCCT 1740
 CAAAGGGAGA GTGGCATCCC TGCTGCTGCT GTGCCAGACC AGAGTTTCCT GAGGGGCCCT 1800
 -5 GACCCTAACC CTCCAGCTCA GCCCTGTACA CCTGACCCTG TAAATGAGTG GGGTTTGCTG 1860
 ACTGTAATCC CTGACACCAG TAAACCAAA AGGACTCTTG GGGGCTCAGT GTGAGAGCCA 1920
 10 GGGTTACCTA CTCTGCCAAG TGAGGACAAA CTGCTAGGCT GTATCCATA ATTTTCAGGAT 1980
 GAGAAACATT AACAATAAAA ATTTGTAGTA AACATAACCT CATGANGACT AAAAAAAAAA 2040
 AAAAACTYGG GGGGGGGCCC GTAACCCATT GGGCCCTTNG GGGGGGNGTT TTTAAATT 2098

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(2) INFORMATION FOR SEQ ID NO: 149:

20

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1847 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 149:

TCGACCCACG CGTCCGAACT GAGGCGGCGG CGGGAGCCGG TTGGKGTCTG GTCTTCGCGT 60
 30 CGGCCCCGCG GACCAGACGC TGCCCCCGGC GCGGGGAGAA GATGGTGCKK AGCGGCCTCG 120
 GGCCCCGCAC GCGCCGCCAC GAGTGAGCCC AGCGCGACCG CGGGCGTCCG CCGAGCAGCT 180
 GGCCCCGCTG GGCCCCGGGC GCGCANTGCC CGCCGGGCG GGGTGAGCT GATCAGAATA 240
 35 ATGTTTCAGCA TCAACCCCTT GGAGAACCTG AAGGTGTACA TCAGCAGTCG GCCTCCCTTG 300
 GTGGTCTTCA TGATCAGCGT AANGCCCATG GCCATAGCTT TCCTGACCCT GGGCTACTTC 360
 40 TTCAAATCA AGGAGATTAA ATCCCCAGAA ATGGCAGAGG ATTGGAATAC TTTTCTGCTA 420
 CGGTTCAATG ATTTGGACTT GTGTGTATCA GAGAATGAAA CCCTCAAGCA TCTCACAAC 480
 GACACCACAA CTCCGGAAAG TACAATGACC AGCGGGCAGG CCCGAGCTTC CACCCAGTCC 540
 45 CCCCAGGCCC TGGAGGACTC GGGCCCGGTG AATATCTCAG TCTCAATCAC CCTAACCTG 600
 GACCCACTGA AACCTTCCG AGGGTATTC CGCAACGTCA CCCATCTGTA CTCAACCATC 660
 50 TTAGGGCATC AGATTGGACT TTCAGGCAGG GAAGCCACG AGGAGATAAA CATCACCTTC 720
 ACCCTGCCTA CAGCGTGGAG CTCAGATGAC TCGCCCTCC ACGGTCACTG TGAGCAGGTG 780
 GTATTTCAG CCTGCATGAC CCTCACGGCC AGCCCTGGGG TGTTCCTCGT CACTGTACAG 840
 55 CCACCGCACT GTGTTCTGA CACGTACAGC AACGCCACGC TCTGGTACAA GATCTTCACA 900
 ACTGCCAGAG ATGCCAACAC AAAATACGCC CAAGATTACA ATCCTTTCTG GTGTTATAAG 960
 60 GGGGCCATG GAAAAGTCTA TCATGCTTGA AATCCCAAGC TTACAGTGAT TGTTCAGAT 1020

5 GATGACCGTT CATTAATAAA TTTCATCTC ATGCACACCA GTTACTTCCT CTTTGTGATG 1080
 GTGATAACAA TGTTTTGCTA TGCTGTTATC AAGGGCAGAC CTAGCAAATT GCGTCAGAGC 1140
 AATCCTGAAT TTGTGCCGA GAAGGTGGCT TTGGCTGAAG CCTAATCCA CAGCTCCTTG 1200
 TTTTTTGAGA GAGACTGAGA GAACCATAAT CCTTGCCTGC TGAACCCAGC CTGGGCCTGG 1260
 10 ATGCTCTGTG AATACATTAT CTTCGATGT TGGGTATTTC CAGCCAAAGA CATTTCAAGT 1320
 GCCTGTAAC TATTGTGACA TATTTATAAA AATCTATTCA GAAATTGGTC CAATAATGCA 1380
 15 CGTGCCTTGC CTGGGTACA GCCAGAGCCC TTCAACCCCA CCTTGGACTT GAGGACCTAC 1440
 CTGATGGGAC GTTCCACGT GTCTCTAGAG AAGGATTCCT GGATCTAGCT GGTACGACG 1500
 ATGTTTTCAC CAAGGTCACA GGAGCATTCG GTCGCTGATG GGGTTGAAGT TTGGTTTGGT 1560
 20 TCTTGTTTCA GCCCAATATG TAGAGAACAT TTGAAACAGT CTGCACCTTT GATACGGTAT 1620
 TGCATTTCCA AAGCCACCAA TCCATTTTGT GGATTTTATG TGTCTGTGGC TTAATAATCA 1680
 TAGTAACAAC AATAATACCT TTTTCTCCAT TTGCTTGCA GGAAACATAC CTTAAGTTTT 1740
 25 TTTTGTTTTG TTTTGTTTT TTTGTTTTT GTTTTCCTTT ATGAAGAAAA AATAAAATAG 1800
 TCACATTTTA ATACTACCAA AAAATGGACA AAAAAAGTCG AGGGGGG 1847

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(2) INFORMATION FOR SEQ ID NO: 150:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1569 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 150:

GACGCTGACG AGAGAAGGCC TCTTCCTTGA GGGTTGGTGC TGTGTTGCAG TGACCGTGGC 60
 45 GGATTACGCC AACTCGGATC CGGCGGTCGT GAGGTCTGGA CGAGTCAAGA AAGCCGTAGC 120
 CAACGCTGTT CAGCAGGAAG TAAATCTCT TTGTGGCTTG GAAGCCTCTC AGGTTCTGTC 180
 50 AGAGGAAGCT CTTTCTGGGG CTGGTGAGCC CTGTGACATC ATCGACAGCA GTGATGAGAT 240
 GGATGCCCCAG GAGGAAAGCA TCCATGAGAG AACTGTCTCC AGAAAAAGA AAAGCAAGAG 300
 ACACAAAGAA GAACTGGACG GGGCTGGAGG AGAAGAGTAT CCCATGGATA TTTGGCTATT 360
 55 GCTGGCCTCC TATATCCGTC CTGAGGACAT TGTGAATTT TCCCTGATTT GTAAGAATGC 420
 CTGGACTGTC ACTTGCAC TGCCCTTTTG GACCAGGTTG TACCGAAGCA CTACACGCTG 480
 60 GATGCTTCCC TGCCTTTGGC TCTGCGACCA GAGTCAATGG AGAAGCTGCG CTGTCTCCGG 540

	GCTTGTGTGA TCCGATCTCT GTACCATATG TATGAGCCAT TTGCTGCTCG AATCTCCAAG	600
	AATCCAGCCA TTCCAGAAAG CACCCCCAGC ACATTAAAGA ATTCCAAATG CTTACTTTTC	660
5	TGGTGCAGAA AGATTGTTGG GAACAGACAG GAACCAATGT GGAATTCAG CTTCAAGTTC	720
	AAAAACAGT CCCCTAGGTT AAAGAGCAAG TGTACAGGAG GATTGCAGCC TCCCGTTCAG	780
10	TACGAAGATG TTCATACCAA TCCAGACCAG GACTGCTGCC TACTGCAGGT CACCACCCTC	840
	AATTTTCATCT TTATTCCGAT TGTCATGGGA ATGATATTTA CTCTGTTTAC TATCAATGTG	900
	AGCACGGACA TCGGCATCA TCGAGTGAGA CTGGTGTTC AAGATTCCCC TGTCCATGGT	960
15	GGTCGGAAAC TCGCAGTGA ACAGGGTGTG CAAGTCATCC TGGACCCAGT GCACAGCGTT	1020
	CGGCTCTTTG ACTGGTGGCA TCCTCAGTAC CCATTCTCCC TGAGAGCGTA GTTACTGCTT	1080
20	CCCATCCCTT GGGGGCAGCC TCGAGTGTAG TCCATTAGTA ATCAGATTCC AGTTTGGACA	1140
	GGGTGGCTGG ATTGTATATC TCGTTAGTAA TGTACATGCT CTTTCAGGTTC TAGGGCTCCT	1200
	GTTAGGGGAG GGAGAAATGT TGAATCAAGA GGGAAAACAA CTACTATGAT TTATAAACAT	1260
25	ATTTTAATGT AAAAATTTGC ATTTAAAAGG AGTGGCCCTG TTTTCTGTGT TAAAACCCCA	1320
	TTTGGTGCTA TTGAGTTTGT TCTTTATCTT TTTATCCCAG TGAAAATTGT TGATCTTGCT	1380
30	GTAGGGAAAA ATTAAACTCT TTGAATCTCC AAACAAGGAA GTTTCAGCAT TCCCTTATGG	1440
	ATCAGAGGAA CCTTAGAGGC CTGAAATTGT TGCTTCCAGT TTAGCTGCCC CTCAAATTCA	1500
	AGTGAATATT TTCCCTTCTC CCTTTACCCT TCTCCAGAAA TAAAGCAGGT GACAGGGTTT	1560
35	CAGAATCTT	1569

40 (2) INFORMATION FOR SEQ ID NO: 151:

(i) SEQUENCE CHARACTERISTICS:

- 45 (A) LENGTH: 1540 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 151:

50	CCCACGCGTC CGGAAGGATT GACCAGTTAA CCAACATCTT AGCCCCCATG GCTGTTGGCC	60
	AGATTATGAC ATTTGGCTCC CCAGTCATCG GCTGTGGCTT TATTTCCGGA TGGAAGTTGG	120
	TATCCATGTG CGTGGAGTAC GTCTGCTCTT GGAAGGTTTA CCAGAAAACC CCAGCTCTAG	180
55	CTGTGAAAGC TGGTCTTAAA GAAGAGGAAA CTGAATTGAA ACAGCTGAAT TTACACAAAG	240
	ATACTGAGCC AAAACCCCTG GAGGGAATC ATCTAATGGG TGTGAAAGAC TCTAACATCC	300
60	ATGAGCTTGA ACATGAGCAA GAGCCTACTT GTGCCTCCCA GATGGCTGAG CCCTTCCGTA	360

	CCTTCCGAGA TGGATGGGTC TCCTACTACA ACCAGCCTGT GTTCTGGCT GGCATGGGTC	420
	TTGCTTTCCT TTATATGACT GTCCTGGGCT TTGACTGCAT CACCACAGGG TACGCCTACA	480
5	CTCAGGGACT GAGTGGGTC CATCCTCAGT ATTTTGATGG GAGCATCAGC TATAACTGGA	540
	ATAATGGGAA CTGTAGCTTT TACTTGGCTA CGTCGAAAAT GTGGTTTGGT TCGGCAGGTC	600
10	TGATCTCAGG ATTGGCACAG CTTCCTGTT TGATCTTGTG TGTGATCTCT GTATTCATGC	660
	CTGGAAGCCC CCTGGACTTG TCCGTTTCTC CTTTTGAAGA TATCCGATCA AGGTTCAATC	720
	AAGGAGAGTC AATTACACCT ACCAAGATAC CTGAAATTAC AACTGAAATA TACATGTCTA	780
15	ATGGGTCTAA TTCTGCTAAT ATTGTCCCGG AGACAAGTCC TGAATCTGTG CCCATAATCT	840
	CTGTCAGTCT GCTGTTTGCA GCGTCATTG CTGCTAGAAT CGGTCTTTGG TCCTTTGATT	900
20	TAACTGTGAC ACAGTTGCTG CAAGAAAATG TAATTGAATC TGAAAGAGGC ATTATAAATG	960
	GTGTACAGAA CTCCATGAAC TATCTTCTTG ATCTTCTGCA TTTCATCATG GTCATCCTGG	1020
	CTCCAAATCC TGAAGCTTTT GGCTTGCTCG TATTGATTTT AGTCTCCTTT GTGGCAATGG	1080
25	GCCACATTAT GTATTTCCGA TTTGCCCAA AACTCTGGG AAACAAGCTC TTTGCTTGCG	1140
	GTCTGATGC AAAAGAAGTT AGGAAGGAAA ATCAAGCAAA TACATCTGTT GTTTGAGACA	1200
30	GTTTAACTGT TGCTATCCTG TTAAGTAGAT ATATAGAGCA CATGTGCTTA TTTTGTACTG	1260
	CAGAATTCCA ATAAATGGCT GGGTGTTTTG CTCTGTTTT ACCACAGCTG TGCCTTGAGA	1320
	ACTAAAAGCT GTTTAGGAAA CCTAAGTCAG CAGAAATTAA CTGGAATTAAT TTCCCTTATG	1380
35	TTGAGGGCCA TGGRAAAAAA ATTGGGAAAA GGAAAAATC AGTTTAAAT ACGGGAGACT	1440
	ATAATGGATA AACTGRATT CCCCTATTTC TCATGAGTAG ATACAATCTT ACGTAAAAGA	1500
40	GTGGTTAGTC ACGTGAATTC AGTTATCATT TGACAGATTC	1540

45 (2) INFORMATION FOR SEQ ID NO: 152:

(i) SEQUENCE CHARACTERISTICS:

- 50 (A) LENGTH: 1719 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 152:

55	TACTTATGAG GTCAATTGGA AATAAGAACA CCAATTTACT GGGTCTAGGA TTTCAAATAT	60
	TACAGTTGGC ATGGTATGGC TTTGGTTCAG AACCTTGGAT GATGTGGGCT GCTGGGGCAG	120
60	TAGCAGCCAT GTCTAGCATC ACCTTTCCTG CTGTCAGTGC ACTTGTTTCA CGAACTGCTG	180

	ATGCTGATCA ACAGGGTGTG GTTCAAGGAA TGATAACAGG AATTCGAGGA TTATGCAATG	240
	GTCTGGGACC GGCCCTCTAT GGATTCATTT TCTACATATT CCATGTGGAA CTAAAGAAG	300
5	TGCCAATAAC AGGAACAGAC TTGGGAACAA ACACAAGCCC TCAGCACCAC TTTGAACAGA	360
	ATTCATCAT CCTGGCCCT CCTTCCTAT TTGGAGCCTG TTCAGTACTG CTGGCTCTGC	420
10	TTGTTGCCTT GTTTATTCG GAACATACCA ATTTAAGCTT AAGGTCCAGC AGTTGGAGAA	480
	AGCACTGTGG CAGTCACAGC CATCCTCATA ATACACAAGC GCCAGGAGAG GCCAAAGAAG	540
	CTTTACTCCA GGACACAAAT GTGTGACGAC TGAAATCAGG AAGATTTTTT TATCAGCACC	600
15	CAGGTCTTAG TTTTCACCTC TAGTTCTGGA TGTACATTC ATTTCCATCC ACAGTGTACT	660
	TTAAGATGT CTAAAGAAAT GTATCTGCAT GAACTCCGTG GAACTAAAG GAAGTGGGAA	720
20	CTTAGAACCA GACAGTTTTT CAAAGATGTT ACAATTTCTT TTGAAAACC TTTGTMTTAT	780
	TAGCACC AAT TTCTYGCCAC TAAGCTATTT GTTTTATTAT ACATCCTTTA ATTAAAACT	840
	ATATATGTAA CTCTTAGAT ATTAGCAAAT GTCTCTGCTA CCATTTCTTT AAGGTGTGA	900
25	GCTTAACTC TATGCTGACT CAGTGAGACA CAGTAGGTAG TATGGTGTG GACCTATTTG	960
	TTTTAACATT GTAAAATTTT GAGTCAGATT TTAATATTGT AAAATCTTGG GTCAAATAAT	1020
30	TCAAAGCCTT AATGCAGATG CACTAAAACA AAGAAATGGT AAATGAATTG TTTGCATTTA	1080
	AAAAAAAAA CTCTTAAGAA AACTGTACTA AATCTGAATC ATGTTTTGAG CTGTTTGCA	1140
	GTACTTTTAA ACATTATTCA CTACTGTTTT TGAAGTGAGA AAGTATCAGC CATTTAGCAT	1200
35	TTAAGTTGGG GTATTTAGAG CCGTAATCT AAATGCTGGC TCAAATTTAT TCCCCAGCTA	1260
	CTTCTTATAC CACTATTCTT TTAATGTTTG CATAATCATA AGCACCTCAA CACTTGAATA	1320
40	CATAATCTAA AAATTATATA GTAAAGCTGG TAGCCTTGAA AATGTCAGTG TGATATCTAT	1380
	TATGTAGATA AATATATATA GTGGCCTTTC AGGACTGTCA CAGTAACACT TTATTTACAG	1440
	AGCTAATGTT TGTCTTAAAT TTTCAGGACC CTAGAGGAGA GCTTTATACA ATTACCGATG	1500
45	TGAATTTCTC TAAAGTGTAT ATTTTGTGT CCAGTTATAT TATTTAAAAA AGTGTACTT	1560
	TGTAAAAATT GTATATAAAG AACTGTATAG TTTACACTGT TTTTATCTTG TGTGTGGTTA	1620
50	TTGCTTAATG CTTTTTAAAC TTGGAACACT CACTATGGTT AAATAAGGTC TTAAAAGAAA	1680
	TGTAAATATT YTGTTAATAA AGTTAAATAT TTTAATGAT	1719

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(2) INFORMATION FOR SEQ ID NO: 153:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 863 base pairs

(B) TYPE: nucleic acid

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(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 153:

5 GGCACGAGGG AAGCCGGGAC GATGTCCGCA TGACAACCGA CGTTGGAGTT TGGAGGTGCT 60
TGCCTTAGAG CAAGGGAAAC AGCTCTCATT CAAAGGAACT AGAAGCCTCT CCCTCAGTGG 120
10 TAGGGAGACA GCCAGGAGCG GTTTTCTGGG AACTGTGGGA TGTGCCCTTG GGGGCCCGAG 180
AAAACAGAAG GAAGATGCTC CAGACCAGTA ACTACAGCCT GGTGCTCTCT CTGCAGTTCC 240
TGCTGCTGTC CTATGACCTC TTTGTCAATT CCTTCTCAGA ACTGCTCCAA AAGACTCCTG 300
15 TCATCCAGCT TGTGCTCTTC ATCATCCAGG ATATGTCAGT CCTCTTCAAC ATCATCATCA 360
TTTTCCTCAT GTTCTTCAAC ACCTTCGTCT TCCAGGCTGG CCTGGTCAAC CTCTATTCC 420
20 ATAAGTTCAA AGGGACCATC ATCCTGACAG CTGTGTACTT TGCCCTCAGC ATCTCCCTTC 480
ATGTCTGGGT CATGAACCTA CGCTGGAAAA ACTCCAACAG CTTTCATATGG ACAGATGGAC 540
TTCAAATGCT GTTTGTATT CAGAGACTAG CAGCAGTGT GTACTGCTAC TTCTATAAAC 600
25 GGACAGCCGT AAGACTAGGC GATCCTCACT TCTACCAGGA CTCPTTGTGG CTGCGCAAGG 660
AGTTCATGCA AGTTCGAAGG TGACCTCTTG TCACACTGAT GGATACTTTT CCTTCCTGGA 720
30 TAGRAGGCCA CATTTGCTGC TTTGCAGGGG AGAGTTGGGC CCTATGCATG GGGCAAAACA 780
GGTGGGATTT TCCAAGGGAA GGGTTCAGAA TTAGGCNTGT TGTTCAGCC ATTTCCAAGG 840
AAGGGGAAGG GTTTCCTTNC CCT 863
35

(2) INFORMATION FOR SEQ ID NO: 154:

40 (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 1101 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
45 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 154:

50 AACAGCAAAA AAGAATGATT TCTTCTGAAA TTGTGGAACA TGAGGATTCA AGTTTTTATT 60
TTGTACTAG GTGCTGGAGG AACATCCAG TTCACAAAGC CCCCATCTCT TCCTCTGGAG 120
CCAGACCTTG CGGTGGAATC AAGTCCAAC GAAACATCAG AACAAATAAG AGAGAAATAA 180
55 GAATAGAATG AATGACCCCA AAATARGGTT TTCTTGGGCG AGGATGTGCT GGATTAGGAA 240
AGGTGACATG ACACAGGCAG AGCAGAGTGG CACCCACCAC AGAATACAGT GTGTGTTATT 300
ACGAGGAGCC AGCAGTTGAG CCTAAGGTCC TTCTACCTAC CTGGTATTGG CATTTGAGGT 360
60

	CGGAAACCTT	CTACTGCCCC	ATAAGCCAGG	AAAAGTGAAA	AGAGAACACA	GTTCCCTTTAA	420
	GAACTGGCAG	CAAGGCTTGA	GGCCTTATGT	ATGTAGCTGA	GTCAGCAAGG	TACATGATGC	480
-5	TGTCTGCTTT	CAAAAGGACT	TTTCTCTCCT	AGCTGACTGA	CTCCTTCCTT	AGTTCAAGGA	540
	ACAGCTGAGA	CAGACCTCTG	CTGAGTAGCT	CTGTGATGAC	AAAGCCTTGG	TTTAACTGAG	600
10	GTGATCCTCA	GGTTGTGAGG	TTTATTAGTC	CCCAAGGCAA	ACACAAATAT	TAGATTAATA	660
	ATCCAACCTT	AATAGTATAC	ATTTAAAAGA	AAAAAAACAA	AAGCCCTGGA	AGNITGAGGC	720
	CAAGCCTGCT	GAGTATTGCA	GCTGCATTTG	CCCAAAGGGA	ATCCAGAACA	AGTCCCTCCC	780
15	TGTATTTTGT	TCTTGAGAGG	GGTCAGTCTA	GAAGCTAGAT	CCTATCAGGA	TGAGGAGCAG	840
	CAGCCCAGGG	CTTGTCTGGA	TCAGCACCAA	CGATTTTAAA	GAAAAAAGGA	AGAGTTTCTT	900
	AGATGAGTAA	TTGTTATTGA	AGATAGTCAG	TGATAACCCAC	TGACCAGATG	CTATCAATAC	960
20	ACTATGTGTC	CTTTTTPAGAA	TAAAGATTAC	ATATCATCAT	TCCTTTGGGG	AAAATTGTTA	1020
	TTCAAGTATA	AAAACAAGAG	ATTATAATAA	AAAANTAAAA	GAACCCTAAA	AAAAAAAAC	1080
25	CTCGTGCCGA	ATTCCCTGCA	G				1101

30 (2) INFORMATION FOR SEQ ID NO: 155:

(i) SEQUENCE CHARACTERISTICS:

- 35 (A) LENGTH: 2031 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 155:

40	CAATTAACCC	GTTTGAGGCC	TAGGTGTGTT	GGCAAGCCCC	NGGCCTAAAG	TTTTAATTCC	60
	GCAGAGCCAA	GGCCTGAAA	GGAAGGAAA	GGGGAGGGTA	GCGGGAGGGT	AGCAGGTGAG	120
	TTCTAGGGC	TGGAAGGTTT	AGCAGCAGCC	TGGTGCAGTG	CCCTGTCATC	AAGACAAACC	180
45	CACGGTCCTC	CTGGGTGCCT	ACCAAGCTTG	GTTTGTACAA	AAGCAAGGTG	GGAGTCTATT	240
	TTTGTACATG	AGATACATCA	CACTTACCTG	TGGGCCAGTA	TTGTGAAGTG	AGTCTGAGTT	300
50	GTTTACACTG	ATGCCTTCCC	TGCCCACCAC	AAATTGTGTA	CATAGTCTTC	AGAATGATAC	360
	CACCCCTTTC	CCCAGCTCCC	AACCAAGAGC	TGGTTCTAGG	CCTGTGTTAT	ATGTCATATT	420
	TAGCGTTTTT	ATATATGACC	TTTGATTCTT	GTTGTTTGTA	TTTTAGCACA	GTGTATGCAC	480
55	CTTCATTTAA	ATACATCTGT	GTGCATACAG	ATACGCATAT	ATGTGTGTGC	GTATGCATAT	540
	ATCTCTCATC	TGTAGTTTCC	AAGAGTTCAG	CTGAAGCAGA	TGGAGTCCTG	CAGCCCAGGA	600
60	GACACCCTGC	ATCCCTGCTA	ATAGTGTMTG	CCACAAGTAT	TAGTGAGTCT	TCCTTATTAA	660

TATTTTCATT TCAGAAGACT GAAGCAAAGC TGATAGTGTT TGCTGTTTCT TTGGCAGCTA 720
AGTGAGGGTC TTGGGATGAC TTGCTGTGTT CCTCAAGCTG CACTTTGGGG CCATCTCTGC 780
-5 AGTATTAAGC CCCCTTTTGG CTGGGTGTA CTCTGTCTGT GCCTGTGTGT GTGTGTGATA 840
GTCACTCTTG CATGGCTTCC ATGTCTGGTT TGTGGCATTT GGGGATAAGT GCTGAACCAG 900
10 AGCATTTGCA GTTGTGTTGA GGCCTCGTTG CCAATGATAG ATCACTCCTG TTGACCTGGT 960
ATGTCTGCTT GCTTGCTGCT TTTCTTGCT TTCTCTTGGA AGAGGAAAGG ACTCTGGTCA 1020
GGCCCAGGCT GAGTGAGATG AGCTGCAGCT GGCTCATGGC CTCTTTAGAG CAGAGAGAGG 1080
15 AGTATGTCAT TTTACTAAGT TCCTAAACAA ACATTTATGC AGGCAACACT CCTTGCAGAT 1140
CCAGAACTG AGGCACAATA GGGTTATGAC TTGCTCAAGA ATATGTAGCT GCTAGGGGGT 1200
20 AAATCAAGGC ATCACAATTT CTGTTCAAGC GGCAGGAATA GGCTGTGAAT TGCTAGCACT 1260
TTTTTTTAA GCAATTACTT TTGACTTGT TCCTCTGAAA GTGCAAGAGG CGTACACCTT 1320
TCCCAAATGT AGACTAGAAT CTGCAGGATG CCACCCACTG TATAGTTCTG CTTTCCCAGA 1380
25 GAGGAAGAAC TTTAGAAAC CAAATGATCT TAATTGTTAT TGCCCACCCC TGGCTTTTCC 1440
GGGTAGAAAA TTCACAGTAG GAATGATTGT TAAGAGAGAG TGCTTGGAAC CATGGGTTAA 1500
30 CAGGAAAGGC TACCTAACTT CACATATCTG CAACCAGAGC AGCCACCAAG CATTACTTAG 1560
CAGCAGGAAA ATGATTGTAT TTGAGTTTCT GTGTGTCCAA AACTGAGGCA CCATGTTCTT 1620
TGAAAACATG CCACCTCAAG GCTGGGCGCG GTGGCTCACA CCTGTTAATC CCAGCACTTT 1680
35 GGGAGGCCGA GCGGGCGGA TCACCGAGT CGGGAGTTT GAGACCAGCC TGGACCAACA 1740
TGGGAGAAAC CCCATCTCTA CCTAAAATA CAAAATTAGC CGGGCGTGGT GGCATGCGCC 1800
40 TATAATCTCA GCTACTTGGG AGGGYTGAGG CAGGRGAATT GCTTGAACCC RGGANGGCGG 1860
AGGTTTGCGG TTGAGTTGAG GATCGTGCCA TTGCACTTCC GGGCCTTGGG GCAACAACAG 1920
CAAAAAYTCC GTCTTCAAMW MRTGCCGAAT TCGATATCAA GCTTATCGAT ACCGTCGACC 1980
45 TCGAGGGGGG GCCCGGTACC CAATTCGCCC TATAGNGATC GTATTACAAT C 2031

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(2) INFORMATION FOR SEQ ID NO: 156:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 1981 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 156:

	CCTGCACCCCT GAGCCCTTCA CCCCTCCGAG TTCCCCCAG GTTGGCTTCC TTCGATTCCT	60
	TTTCTTGTA TCAACGTTTG ATTGGAAGAA CAACCCCTC TTTGTCAACC TCAATAATGA	120
-5	GCTCACTGTG GAGGAGCAGC TCGGGCACAG CTCMCCGTYA TGGTCATTGT TACCCCCCAA	180
	GACCGCAAAA ACTCTGTGTG GACACAGGAT GGACCTCAG CCCAGATCCT GCAGCAGCTT	240
10	GTGGTCCTGG CAGCTGAAGC CCTGCCCATG TTAGAGAAGC AGCTCATGGA TCCCCGGGA	300
	CCTGGGGACA TCAGGACAGT GTTCCGGCCG CCCTTGGACA TTTACGACGT GCTGATTCCG	360
	CTGTYTCTTC GCCATATCCC GCGGCACCGC AGGCTTGTGG ACTCGCCAGY TGCCTCCTTC	420
15	TGCCGGGGCC TGCTCAGCCA GCCGGGGCCC TCATCCCTGA TGCCCGTGCT GGGTNATGAT	480
	CCTNCTCAGC TCTATCTGAC GCAGCTCAGG GAGGCCTTTG GGGATCTGGC CCTTTTCTTC	540
20	TATGACCAGC ATGGTGGAGA GGTGATGGT GTCTCTGGA AGCCACCAG CTTCAGCCG	600
	CAGCCCTTCA AGGCCTCCAG CACAAAGGG CGCATGGTGA TGTCTCGAGG TGGGGAGCTA	660
	GTAATGGTGC CCAATGTGA AGCAATCCTG GAGGACTTTG CTGTGCTGGG TGAAGGCCTG	720
25	GTGCAGACTG TGGAGGCCCG AAGTGAGAGG TGGACTGTGT GATCCCAGCT CTGGAGCAAG	780
	CTGTAGACGG ACAGCAGGAC ATTGGACCTC TAGAGCAAGA TGTCAGTAGG ATGACCTCCA	840
30	CCCTCCTTGG ACATGAATCC TCCATGGAGG GCCTGCTGGC TGAACATGCT GAATCATCTC	900
	CAACAAAACC CAGCCCCAAC TTTCTCTCTG ATGCTCCAGC ATTGGGGCAG GGGCATGGTG	960
	GCCCATGTAG TCTCCTGGGC CTCACCATCC CAGAAGAGGA GTGGGAGCCA GCTCAGAGAA	1020
35	GGAAGTGAAC CCAGGAGATC CATCCACCTA TTAGCCCTGG GCCTGGACCT CCCTGCGATT	1080
	TCCCACTCCT TTCTTAGTCT TCTTCCAGAA ACAGAGAAGG GGATGTGTGC CTGGGAGAGG	1140
40	CTCTGTCTCC TTCTGTCTGC CAGGACCTGT GCCTAGACTT AGCATGCCCT TCACTGCAGT	1200
	GTCAGGCCTT TAGATGGGAC CCAGCGAAAA TGTGGCCCTT CTGAGTCACA TCACCGACAC	1260
	TGAGCAGTGG AAAGGGGCTA TATGTGTATG AATAGACCAC ATTGAAGGAG CACAATGCCC	1320
45	TCCTGTGTG ATGCCACTTC CCAGGGTGA GACAGTGGAA AAGAACCAG GACAGGAAAG	1380
	GATTGGGTAG GTGAAGGGT CAGGGGACTG GTAGTACCC AATCTTGGAG AGGTGCAAAA	1440
50	AGCACTGGGG GCTACCCGTT AGCTGCATCT GCCCTGGCTG TTTGCCCGTT CATGTCACAA	1500
	ACTGCCACTA CTATGTACCT GCAGTGGGGT TGCAGAGATG GGGGAGACTC AAGTCTTACT	1560
	CCCCAGGAGC TCCCAGGGCC CAAGGAGGAG AATGCTGCCT CCTTTTCAGT TGGTCTACAC	1620
55	CCACTTTCTG GTAGCCTCTC TGCTTCTCTG AATTCTGGCT GTTTTTCAG ACTCAGCTCA	1680
	AATAGTGCCC CTCCTTAAGC CCATCCCTCG CCCCAGCCT GAGGTGATCT TTCCCTCCTC	1740
60	TGAACTATTA GAGCAGTTAC TGTCTGTTC GTTCGTTTGG CAGGCACACA CAGTGGCATA	1800

AATTCTATTG TTTTGAAGTC TGATTTAAAA TTAAATGCA GCTGGGCGTG GTGGCTCATG 1860
CTTGTAATCC CAACACTTAG GGAGTMAGGR GAATCACTTG ASCYCAGGAG TYCTAGACCA 1920
-5 ATCTGGGCAA MAGAGAGACC CCATCTCTTT TAAATAAAAA GTTAAATTGC TTAATAAAAA 1980
A 1981

10

(2) INFORMATION FOR SEQ ID NO: 157:

(i) SEQUENCE CHARACTERISTICS:
15 (A) LENGTH: 915 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 157:

GAATTCGGCA CGAGCGCGGC CATGGCGCTC CTGCTTTCGG TGCTGCGTGT ACTGCTGGGC 60
GGCTTCTTCG CGCTCGTGGG GTTGGCCAAG CTCTCGGAGG AGATCTCGGC TCCAGTTTCG 120
25 GAGCGGATGA ATGCCCTGTT CGTGCACTTT GCTGAGGTGT TCCCGCTGAA GGTATTGCGC 180
TACCAGCCAG ATCCCTGAA CTACCAAATA GCTGTGGGCT TTCTGGAAGT GCTGGCTGGG 240
30 TTGCTGCTGG TCATGGGCCC ACCGATGCTG CAAGAGATCA GTAACCTGTT CTGATTTCTG 300
CTCATGATGG GGGCTATCTT CACCTTGGCA GCTCTGAAAG AGTCACTAAG CACCTGTATC 360
CCAGCCATTG TCTGCCCTGG GTTCTCTGCTG CTGCTGAAATG TCGGCCAGCT CTTAGCCCGAG 420
35 ACTAAGAAGG TGGTCAGACC CACTAGGAAG AAGACTCTAA GTACATTCAA GGAATCCTGG 480
AAGTAGAGCA TCTCTGTCTC TTATGCCAT GCAGCTGTCA CAGCAGGAAC ATGGTAGAAC 540
40 ACAGAGTCTA TCATCTTGTT ACCAGTATAA TATCCAGGGT CAGCCAGTGT TGAAAGAGAC 600
ATTTTGCTCTA CCTGGCACTG CTTTCTCTTT TTAGCTTTAC TACTCTTTTG TGAGGAGTAC 660
ATGTTATGCA TATTAACATT CCTCATGTCA TATGAAAATA CAAAATAAGC AGAAAAGAAA 720
45 TTAAATCAA CCAAAATCTT GATGCCCCAA ATAACCACTT TTAATGCCCTT GGTGTAAGTA 780
TACCTCTGAA CTTTTTCTG TGCCCTTAAA CAGATATATA TTTTTTTTWA ATGAAAATAA 840
50 AACCATATAT CCTATTTTAT TTCTCTCTTT TAAAACCTTA TAAACTATAA MAAAAAAAAA 900
AAAAAAAAA CTCGA 915

55

(2) INFORMATION FOR SEQ ID NO: 158:

(i) SEQUENCE CHARACTERISTICS:
60 (A) LENGTH: 2117 base pairs

(B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

- 5	(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 158:	
	AGAGCGAAGC GAGGGTGGCG CGGGTCCGGG CATGAAGCTG GGCCGGGCGG TGCTGGGCCT	60
	GCTGCTGCTG GCGCCGTCCG TGGTGCAGGC GGTGGAGCCC ATCAGCCTGG GACTGGCCCT	120
10	GGCCGGCGTC CTCACCGGCT ACATCTACCC GCGTCTCTAC TGCCCTCTCG CCGAGTGCTG	180
	CGGGCAGAAG CGGAGCCTTA GCCGGGAGGC ACTGCAGAAG GATCTGGACG ACAACCTCTT	240
15	TGGACAGCAT CTTGCAAAGA AAATCATCTT AAATGCCGTG TTTGGTTTCA TAAACAACCC	300
	AAAGCCCAAG AAACCTCTCA CGCTCTCCCT GCACGGGTGG ACAGGCACCG GCAAAAATTT	360
	CGTCAGCAAG ATCATCGCAG AGAATATTTA CGAGGGTGGT CTGAACAGTG ACTATGTCCA	420
20	CCTGTTTG TG GCCACATTGC ACTTCCACA TGCTTCAAAC ATCACCTTGT ACAAGGATCA	480
	GTTACAGTTG TGGATTGAG GCAACGTGAG TGCCGTGTCG AGGTCCATCT TCATATTTGA	540
25	TGAAATGGAT AAGATGCATG CAGGCCTCAT AGATGCCATC AAGCCTTTCC TCGACTATTA	600
	TGACCTGGTG GATGGGTCTT CCTACCAGAA AGCCATGTTT ATATTTCTCA GCAATGCTGG	660
	AGCAGAAAGG ATCAGAGATG TGGCTTTGGA TTTCTGGAGG AGTGGAAAGC AGAGGGAAGA	720
30	CATCAAGCTC AAAGACATTG AACACGCGTT GTCTGTGTCG GTTTTCAATA ACAAGAACAG	780
	TGGCTTCTGG CACAGCAGCT TAATTGACCG GAACCTCATT GATTATTTTG TTCCCTTCTT	840
35	CCCCCTGGAA TACAAACACC TAAAAATGTG TATCCGAGTG GAAATGCAGT CCCGAGGCTA	900
	TGAAATTGAT GAAGACATTG TAAGCAGAGT GGCTGAGGAG ATGACATTTT TCCCCAAGA	960
	GGAGAGAGTT TTCTCAGATA AAGGCTGCAA AACGGTGTTC ACCAAGTTAG ATTATTACTA	1020
40	CGATGATTGA CAGTCATGAT TGGCAGCCGG AGTCACTGCC TGGAGTTGGA AAAGAAACAA	1080
	CACTCAGTCC TTCCCACTT CCACCCCGAG CTCCTTTCCC TGGAAGAGGA ATCCAGTGAA	1140
45	TGTTCTGTGT TGATGTGACA GGAATCTCTC CTGGCATTGT TTCCACCCC TGGTGCTGTC	1200
	AGGCCACCCA GGGACCACGG GCGAGGACGT GAAGCCTCCC GAACACGCAC AGAAGGAAGG	1260
	AGCCAGCTCC CAGCCCACTC ATCGCAGGGC TCATGATTTT TTACAAATTA TGTTTTAAIT	1320
50	CCAAGTGT TT CTGTTTCAAG GAAGGATGAA TAAGTTTAT TGAAAATGTG GTAACTTTAT	1380
	TTAAAATGAT TTTTAACATT ATGAGAGACT GCTCAGATTC TAAGTTGTTG GCCTTGTTG	1440
55	TGTGTTTTTT TTTAAGTTCT CATCATTAIT ACATAGACTG TGATGTATCT TTAAGTGA	1500
	TGAGCCCAAG CACACATGCA TGGCATTTGT TCCACAGGAG GGCATCCCTG GGGATGTGGC	1560
60	TGGAGCATGA GCCAGCTCTG TCCCAGGATG GTCCCAGCGG ATGCTGCCAG GGGCAKTGAA	1620

GTGTTTAGGT GAAGGACAAG TAGGTAAGAG GACGCCTTCA GGCACCACAG ATAAGCCTGA 1680
 AACAGCCTCT CCAAGGGTTT TCACCTTAGC AACAAATGGA GCTGTGGGAG TGATTTTGGC 1740
 -5 CACACTGTCA ACATTTGTTA GAACAGTCT TTTGAAAGAA AAGTATTTCC AACTTGTACAC 1800
 TTGCCAGTCA CTCCGTTTGT CAAAAGGTGG CCTTCACTG TCCATTCCAA ATAGCCCACA 1860
 10 CGTGCTCTCT GCTGGATTCT AAATTATGTG AATTTTGCCA TATTAAATCT TCCTCATTTA 1920
 TACTATTATT TGTTACGTTT AATCAGAATC CCCGAAACCT CCTATAAAGC TTAGCTGCCC 1980
 CTCTGAGGA TGCTGAGAAC GGTGTCTTTC TTTATAAATG CAAATGGCTA CCGTTTACAA 2040
 15 ATAAAAATTTT GCATGTGCAA AAAAAAAAAA ANAAAAAAAA AAAATCCCGG GGGGGGGCCG 2100
 GTAACCAATT TGNCCCC 2117

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(2) INFORMATION FOR SEQ ID NO: 159:

25 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 2395 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 159:

TGTTCCITAA TCCCTTTTCT AAAAAGGGGG GAAAATCCCG ATGGATTTTA GGGATTGGTC 60
 TGGTGTGAGC TGTGTTTAT TGCACACCTA AATCCTGATT ATAGGCTTTT CATTTCTCCG 120
 35 CAAAGCCTTT ATTTTGGCAG TTAAGCCAAA TGTGTTTTC AGAAAGTTAG TTATTTTCTC 180
 CTCTTTCTTT CCTTCTTTC CTCCCTTTT CCCGTCTGAC CCCAAACGTT ATTGTCCAAA 240
 40 CATGACTGGA CAGCAGCTTT TGTTCCTTGA CCTGTAAATA TGACAGTCTG CTAATATTGA 300
 CAGAAGGTGC AGTTTTTGGG TTATAGTCGT GATTTTCGCT AATCAATCAT ATTAGCAGGA 360
 AAAAAAAGKA CTGTGTTCTG TTGTACTTGA GTCTTAAAGAA AAAGTGGCCC ATAGTTTAGT 420
 45 GGACAATTTT CAAAGGCTTT AGTACCACCT GTATTTCAAA ATGGGGGACC CAAACTCCCG 480
 GAAGAAACAA GCTCTGAACA GACTACGTGC TCAGCTTAGA AAGAAAAAAG AATCTCTAGC 540
 50 TGACCAGTTT GACTTCAAGA TGTATATTGC CTTTGTATTTC AAGGAGAAGA AGAAAAAGTC 600
 AGCACTTTT GAAGTGCTG AGGTTATACC AGTCATGACA AATAATTATG AAGAAATAT 660
 CCTGAAAGGT GTGCGAGATT CCAGCTATTC CTTGGAAAGT TCCCTAGAGC TTTTACAGAA 720
 55 GGATGTGGTA CAGCTCCATG CTCCTCGATA TCAGTCTATG AGAAGGGATG TAATTGGCTG 780
 TACTCAGGAG ATGGATTTC TTTTGGCC TCGGAATGAT ATTGAAAAA TCGTCTGTCT 840
 60 CCTGTTTCT AGGTGGAAG AATCTGATGA GCCTTTTAGG CCGTTTCAGG CAAATTTGAG 900

TTTCATCATG GTGACTATGA AAAACAGTTT CTGCATGTAC TGAGCCGCAA GGACAAGACT 960
 GGAATCGTTG TCAACAATCC TAACCAGTCA GTGTTTCTCT TCATTGACAG ACAGCACTTG 1020
 CAGACTCCAA AAAACAAAGC TACAATCTTC AAGTTATGCA GCATCTGCCT CTACCTGCCA 1080
 CAGGAACAGC TCACCCACTG GGGCAGTTGG CACCATAGAG GRTCACCTCC GTCCCTTATAT 1140
 GCCAGAGTAG AGTACTGACC AGCAAAATGG AGAAGATCAG AGAATGCAGC AGCAGTTTTT 1200
 TTTCTTGTTC TCTTACCACT TTATTCTTTC AGAGTTTAAA GAAAATGGAC TCATGCACAG 1260
 AACACTATGC ATTTTGAAAC TGTTCATCC TGGATTTTTT TAAATCATTT TTATCTCAGA 1320
 ACTTAAACAA AAATTAGATG TCGTGCACGG ACTGTGTGAA AGAAGATGCT TTGCATATTT 1380
 GCTGCACTGC ATCAGTATCT TACTAAAAAT GTGAAATGAA AGGACTATTG TACACTGAAA 1440
 TGCTTAAATG TATCTGAAAG CACAAGGTGA TACTCATTTT TATGGTCTTC CCATTTGTGC 1500
 TGGTTTTTGC CTCTTTGACA TCTGTCATCA GTATTTAGAG GGTGAGAAGT GAATGTAACA 1560
 GGTATAAATA ACATTTTTAA AAACAATAAC TTTGCTATAA TCACAGTTGT TCCAGAGCAC 1620
 TGTCAGATAC ATTCTAATGA CCAGAAGTGG TTTAAAAAAA GAAAATACAA CCATGGGAAA 1680
 GAAATCTTAA ATGAAAAACG CATCTCATTG TAGGCATTTT TGCCTCATAT TTTACTGGGC 1740
 CATGTTTGT TCCTGGTACT CATGTATTTT TTTTTCCAG ATCTCTTTCC CCAAGTTGCT 1800
 ATTGTAAGAG TATTCTGCTG CGTGTGGATG CAGTTATACA CATTAAGCA GATCTGGAGT 1860
 CTGAAGTAGC TATAAAGCAG CTATAAAACA GAAATACATG CATAGCTGCA GAAACCATGA 1920
 TAGGTAGAGG ACTTTTCTTT TGGTTTGTTC TTGTTTGTTC TTGTTTGTTC TTTGGTTTTA 1980
 CAGAGAAGAG ATTTTATTA CAAAGAAAAA AATCCAGTG AATTGTGCAG AAATGCTGGT 2040
 TTTTACACCA TCCTAAAGAA AAACTTTACA AGGGTGTTCG GGAGTAGAAA AAAGTTTATA 2100
 AAGTTGGAAT CTAAATTTGT AAAATTAACC ATTGAGTGTG AAAGTTCTAA AAGCAGAACT 2160
 CATTTTGTGC AATGAACATA AGGAAAGACT ACTGTATAGG TTTTTTTTTT TTCTCCTTTT 2220
 AAATGAAGAA AAGCTTTGCT TAAGGGTTGC ATACTTTTAT TGGAGTAAAT CTGAATGATC 2280
 CTACTCCTTT GGAGTAAAC TAGTGCTTAC CAGTTTCCAA TTGTATTTAG CTCTCTGGTTG 2340
 GAATTTGAAA AAAAAAGAAA AAAAGAAAAA GAAAACCTAA ATAAATAGG TGAAA 2395

55 (2) INFORMATION FOR SEQ ID NO: 160:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2120 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

60

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 160:

5	CCCCGGATAC CGCCTGACGT AGTGCCAATC ACACCTCTCG CGTCTCGGCG CCTCGGAGGC	60
	TAATGAGGAC GCCTGGCGAA ACGCAGTAAC GGATTTCGGG GTGGACCTTC GCTTTACGGC	120
10	TCGTGAGTTC TTCCGCCCAA CCCAGAGGAA GCGGGAGAGC AGTTTACGAC AGCGCCGGTC	180
	GTGTTTACGG CGGCGCCCGC TGC CGCGCA TGTTCCTCT TTTCTGGTT TCTCAAGAGT	240
	GCTGCTGCTA ACGCGGTCCC CGGCACGCAC CATCTGTTC CATCCCGGCC GGCCGAGGCA	300
15	TTGCAGATTT TGGAAGATGG CAAAGTTCAT GACACCCGTG ATCCAGGACA ACCCCTCAGG	360
	CTGGGGTCCC TGTGCGGTTT CCGAGCAGTT TCGGGATATG CCCTACCAGC CGTTCAGCAA	420
20	AGGAGATCGG CTAGGAAAGG TTGCAGACTG GACAGGAGCC ACATACCAAG ATAAGAGGTA	480
	CACAAATAAG TACTCCTCTC AGTTTGGTGG TGGAAGTCAA TATGCTTATT TCCATGAGGA	540
	GGATGAAAGT AGCTTCCAGC TGGTGGATAC AGCGCGCACA CAGAAGACGG CCTACCAGCG	600
25	GAATCGAATG AGATTTGCCC AGAGGAACCT CCGCAGAGAC AAAGATCGTC GGAACATGTT	660
	GCAGTTCAAC CTGCAGATCC TGCCTAAGAG TGCCAAACAG AAAGAGAGAG AACGCATTCCG	720
30	ACTGCAGAAA AAGTTCAGA AACAAATTGG GGTTAGGCAG AAATGGGATC AGAAATCACA	780
	GAAACCCCGA GACTCTTCAG TTGAAGTTCG TAGTGATTGG GAAGTGAAAG AGGAAATGGA	840
	TTTTCTCAG TTGATGAAGA TGCGTACTT GGAAGTATCA GAGCCACAGG ACATTGAGTG	900
35	TTGTGGGGCC CTAGAATACT ACGACAAGC CTTTGACCGC ATCACCACGA GGAGTGAGAA	960
	GCCACTGCGG ASATNCAAGC GCATCTTCCA CACTGTCAAC ACCACAGACG ACCCTGTCAT	1020
40	CCGCAAGCTG GCAAAACTC AGGGGAATGT GTTTGCCACT GATGCCATCC TGGCCACGCT	1080
	GATGAGCTGT ACCCGCTCAG TGTATTCCTG GGATATGTTC GTCCAGAGAG TTGGGTCCAA	1140
	ACTCTTCTTT GACAAGAGAG ACAACTCTGA CTTTGACCTC CTGACAGTGA GTGAGACTGC	1200
45	CAATGAGCCC CCTCAAGATG AAGGTAATTC CTTCAATTCA CCCCACAACC TGCCATGGA	1260
	GGCAACCTAC ATCAACCACA ATTTCTCCCA GCAGTGCTTG AGAATGGGA AGGAAAGATA	1320
50	CAACTTCCCC AACCCAAACC CGTTTGTGGA GGACGACATG GATAAGAATG AAATCGCCTC	1380
	TGTTGCGTAC CGTTACCGCA GTGGNAAGCT TGGAGATGAT ATTGACCTTA TGTTCGTTG	1440
	TGAGCAGGAT GCGGTCATGA CTGGAGCCAA CGGGGAAGTG TCCTTCATCA ACATCAAGAC	1500
55	ACTCAATGAG TGGGATPCCA GGCACGTAA TGGCGTAC TGGCGTCAGA AGCTGGACTC	1560
	TCAGCGAGGG GCTGTCAATTG CCACGGAGCT GAAGAACAAC AGCTACAAGT TGGCCCGGTG	1620
60	GACCTGCTGT GCTTTGCTGG CTGGATCTGA GTACCTCAAG CTTGGTTATG TGTCTCGGTA	1680

CCACGTGAAA GACTCCTCAC GCCACGTCAT CCTAGGCACC CAGCAGTTCA AGCCTAATGA 1740
 GTTTGCCAGC CAGATCAACC TGAGCGTGGA GAATGCCTGG GGCATTTTAC GCTGCGTCAT 1800
 5 TGACATCTGC ATGAAGCTGG AGGAGGGCAA ATACCTCATC CTCAAGGACC CCAACAAGCA 1860
 GGTCAATCCGT GTCTACAGCC TCCCTGATGG CACCTTCAGC TCTGATGAAG ATGAGGAGGA 1920
 10 AGAGGAGGAG GAAGAAGAGG AAGAAGAAGA GGAAGAACT TAAACCAGTG ATGTGGAGCT 1980
 GGAGTTTGTC CTTCCACCGA GACTACGAGG GCCTTTGATG CTTAGTGGA TGTGTGTCTA 2040
 ACTTGCTCTC TGACATTTAG CAGATGAAAT AAAATATATA TCTGTTTAGT CTTAAAAAAA 2100
 15 AAAAAAAAAA AAAAAAAAAAN 2120

20 (2) INFORMATION FOR SEQ ID NO: 161:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 900 base pairs

(B) TYPE: nucleic acid

25 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 161:

30 GGAAGCTGAA GTCCTTCCAG ACCAGGGACA ACCAGGGCAT TCTCTATGAA GCTGCACCCA 60
 CCTCCACCCCT CACCTGTRAC TCAGGACCAC AGAAGCAAAA GTTCTCACTC AAAGTGGATG 120
 CCAAGGATGG GCGCTGTTC AATGAGCAGA ACTTCTTCCA GCGGGCCGCC AAGCCTCTGC 180
 35 AAGTCAACAA GTGGAAGAAG CTGTACTCGA CCCCCTGCT GGCCATCCCT ACCTGCATGG 240
 GTTTCGGTGT TCACCAGGAC AAATACAGGT TCTTGGTGTT ACCCAGCCTG GGGAGGAGCC 300
 40 TTCAGTCGGC CCTGGATGTC AGCCCAAAGC ATGTGCTGTG CAGAGAGGTC TGTGCTGCAG 360
 GTGGCCTGCC GGCTGCTGGA TGCCCTGGAG TTCCTCCATG AGAATGAGTA TGTTCATGGA 420
 AATGTGACAG CTGAAAATAT CTTTGTGGAT CCAGAGGACC AGAGTCAGGT GACTTTGGCA 480
 45 GGCTATGGCT TCGCNFTCCG CTATTGCCCA AGTGGCAAAC ACGTGGCCTA CGTGGAAGGC 540
 AGCAGGAGCC CTCACGAGGG GGACCTTGAG TTCATTAGCA TGGACCTGCA CAAGGGATGC 600
 50 GGGCCCTCCC GCCGCRGCGA CCTCCAGAGC CTGGGCTACT GCATGCTGAA GTGGCTCTAC 660
 GGGTTTCTGC CATGGACAAA TTGCCTTCCC AAMAMTGAGG ACATCATGAA GCAAAAACAG 720
 AAGTTTGTG ATAAGCCGGG GCCCTTCGTG GGACCCTGCG GTCACCTGAT CAGGCCCTCA 780
 55 GAGACCCTGC AGAAGTACCT GAAGGTGGTG ATGGCCCTCA CGTATGAGGA GAAGCCGCCC 840
 TACGCCATGC TGAGGAACAA CCTAGAAGCT TTGCTGCAGG ATCTGCGTGT GTCTCCATAT 900

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(2) INFORMATION FOR SEQ ID NO: 162:

-5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1003 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

10

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 162:

GGCACGAGAT GAGGGGCACC CAGTGCTTCT AGGGCAGGCT GGGTGGTGGT CCCCTAGGTA 60
15 TCAGCCTCTC TTA CTGTACT CTCCGGAAT GTTAACCTTT CTATTTTCAG CCTGTGCCAC 120
CTGTCTAGGC AAGCTGGCTT CCCCATGGC CCCTGTGGGT CCACAGCAGC GTGGCTGCCC 180
20 CCCAGGGCCA CCGCTTCTTT CTGTATCTC TTTCCTTAAC AGTGACTTGG GCTTGAGTCT 240
GGCAAGGAAC CTGTCTTTTA GCTTCACCAC CAAGGAGAGA GATTGACATG ACCTCCCCGC 300
CCCCTACCA AGGCTGGGAA CAGAGGGGAT GTGGTGAGAG CCAGGTCCT CTGGCCCTCT 360
25 CCAGGGTGT TTCCACTAGT CACTACTGTC TTCTCCTTGT AGCTAATCAA TCAATATTCT 420
TCCCTTGCT GTGGGCAGTG GAGAGGCTGC TGGGTGTACG CTGCACCTGC CCACTGAGTT 480
GGGAAAGAG GATAATCACT GAGCACTGTT CTGCTCAGAG CTCTGATCT ACCCCACCCC 540
30 CTAGGATCCA GGA CTGGGTC AAAGCTGCAT GAAACCAGGC CCTGGCAGCA AACCTGGGAA 600
TGGCTGGAGG TGGGAGAGAA CCTGAACCTC TCTTTCCCTC TCCCTCCTCC AACATTACTG 660
35 GAACTCTATC CTGTTAGGAT CTCTGAGCT TGTTCCTTG CTGGGTGGGA CAGAGGACAA 720
AGGAGAAGGG AGGTCTAGA AGAGGCAGCC CTCTTTGTC CTCTGGGGTA AATGAGCTTG 780
ACCTAGAGTA AATGGAGAGA CAAAAGCCT CTGATTTTAA ATTTCCATAA AATGTTAGAA 840
40 GTATATATAT ACATATATAT ATTCTTTAA ATTTTGAGT CTGTGATATG TCTAAAAATC 900
CATTCCTCT GCCCTGAAGC CTGAGTGAGA CACATGAAGA AACTGTGTT TCATTTAAAG 960
45 ATGTTAATTA AATGATTGAA ACTTGAAAAA AAAAAAAAAA AAA 1003

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(2) INFORMATION FOR SEQ ID NO: 163:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2196 base pairs

(B) TYPE: nucleic acid

55

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 163:

60

AAGAAGCGGC ACACGGATGT GCAGTTCTAC ACAGAAGTGG GAGAGATAAC CACGGACTTG 60

	GGGAAACATC AGCATATGCA TGACCGAGAT GACCTCTATG CTGAGCAGAT GGAACGAGAA	120
5	ATGAGGCACA AACTGAAAAC AGCCTTTAAA AATTTTCATTG AGAAAGTAGA GGCTCTAACT	180
	AAGGAGGAAC TGGAAATTGA AGTGCCTTTT AGGGACTTGG GATTTAACGG AGCTCCCTAT	240
	AGGAGTACCT GCCTCCTTCA GCCCCTAGT AGTGCCTGG TAAATGCTAC GGAATGGCCA	300
10	CCTTTTGTGG TGACATTGGA TGAGGTAGAG CTGATCCACT TTRAGCGGT CCAGTTTCAC	360
	CTGAAGAACT TTGATATGGT AATCGTCTAC AAGGACTACA GCAAGAAAGT GACCATGATC	420
15	AACGCCATTG CTGTAGCCTC TCTTGACCCC ATCAAGGAAT GGTGAATTG CTGCGACCTG	480
	AAATACACAG AAGGAGTACA GTCCCTCAAC TGGACTAAAA TCATGAAGAC CATGTGTGAT	540
	GACCCTGAGG GCTTCTTCGA ACAAGGTGGC TGGTCTTTCC TGGAGCCTGA GGGTGAGGGG	600
20	AGTGATGCTG AAGAAGGGGA TTCAGAGTCT GAAATGAAG ATGAGACTTT TAATCCTTCA	660
	GAAGATGACT ATGAAGAGGA AGAGGAGGAC AGTGATGAAG ATTATTCATC AGAAGCAGAA	720
25	GAGTCAGACT ATTCTAAGGA GTCATTTGGT AGTGAAGAAG AGAGTGAAA GGATTGGGAT	780
	GAAGTGGAGG AAGAAGCCCG AAAAGCGGAC CGAGAAAGTC GTTACGAGGA AGAAGAAGAA	840
	CAAAGTCGAA GTATGAGCCG GAAGAGGAAG GCATCTGTGC ACAGTTCGGG CCGTGGCTCT	900
30	AACCGTGGTT CCAGACACAG CTCTGCACCC CCCAAGAAA AGAGGAAGTA ACTTCTGAAC	960
	TTTGCCCTG AGCTCCATTG TTCTCCAGC CAACCCCTGA AAATTTTACA TGACATAGAA	1020
35	ACTGTATTTT TCCTTTCTGT TTCAATTTGAA GTTTTGCCAT TTGTGTTTAT GGGTTTAGGG	1080
	GGCCATTTGT GTGGACCAAT CTACTCGGGG AATTCCAGGC CCACCAGGAC ACGTGCCAAT	1140
	GGCCCCATTG AGATGGCAAG GGAGGAGGTG TTCTTGAAGA CAGGAGGAGG CTCCCGCTGT	1200
40	TAATAAATAT TGTTTCATTG TTCTCTCTTC CTGTCACCTT CTGCCAAGAC ATTGATGGCT	1260
	TCTGACATCT TATTTGGTGT CTCAAAGCTG TATTTCCAAG ACAGTGGTAC AAGGTGACCC	1320
45	TTAATTACCC GTATCATGGT TCTTGACCAG CACATTC AAT CCTCCAACCT ACCCTACTGC	1380
	CATGACCTTC CGCACATCTC TAAGTTTAT CTTTGCAATA CTCAAGGTTT TCGGAAATTT	1440
	GCTAATGGTT GTGATAAACC ATACAGCTTG AGCCAGTGAG GCAGATTGGG CTGGTGCCTT	1500
50	CGTCTGAGTT TTCCTGCTTT CCTGCCTCGT GCAGATCTG AGGTATATCT GCTGCCTTGG	1560
	AAGACATAAG AAGCAGTGAT ACTCCCTGGC TCGGTTATTT TCTCCATACA ATGCACACAT	1620
55	GGTACAATGA TAGAAGGCAA AATTGCCACT GTCTTCTTTT TTTTCTCATA TATCTAAGGA	1680
	AGATATATCA GGTGTGCTT CATGTACCGC TTCTAGTGAA ATGTAGAGGA AGGCTCAAAG	1740
	GAGTCAACAT TTAGATCTGG AAGGGACAAG TCATGCCTTG GGCCTAGAAT ACCCTGATGA	1800
60	GAAAAGAGAA GAGGAAGGGA GGCCATATCT ACAACANCAN CCTCTCGGCA CTGCTGCTCC	1860

TTATTTTAAC TTGTCTTGC ATTGTCCTGT ATTTATCACA GTTCTGTGTG AACAGCTTTT 1920
 CAAGTATTTG GGGAGTTTAT CTGTCCATCC TCCCCTTCTG GTTCTCTGCA CCCACCTGTC 1980
 -5 CCACTGCAGT TCCTTCOGTG CTCTGTGACT TTAAGAGAAG AAGGGGGAG GGTCCCGGA 2040
 TTTTATGTTT GTTTGTTTTT TCTCCTTAGC AGTAGGACTT GATATTTTCA ATTTTGGAAG 2100
 10 AACTAAAAGA TGAATAAACT GGGTTTTTTT TGTGTGTTGT TTTTGTAAAA AAAAAAAAAA 2160
 AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAA 2196

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(2) INFORMATION FOR SEQ ID NO: 164:

(i) SEQUENCE CHARACTERISTICS:
 20 (A) LENGTH: 1945 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 164:

GCACAGAGTC GGGCGGACGG ACAGGGAGAG GAGGAGAGGG GGTCTGCGCG CGGCCGCTAC 60
 CCAGAAGCCA GCGGACGGCA GCACGGAGTG GGCTGTCCCC GAGCCCAGCC CCGAGCGAGC 120
 30 CCCCCCCCCG CCCCCGMAGG ACGCGCCTYC CAGCCAGCCC GACTYCTAGG AGGAGGGGAG 180
 GCGGGAAAGC AGCTCAAGCC TCACCCACCG CCCTGCCCCC AGCCCCGCCA CTCCCAGGCT 240
 35 CCTCGGGACT CGGCGGGTCC TCCTGGGAGT CTCGGAGGGG ACCGGCTGTG CAGACGCCAT 300
 GGAGTTGGTG CTGGTCTTCC TCTGCAGCCT GCTGGCCCCC ATGGTCTCTG CCAGTGCAGC 360
 TGAAAAGGAG AAGGAAATGG ACCCTTTTCA TTATGATTAC CAGACCCTGA GGA'TGGGGG 420
 40 ACTGGTGTTC GCTGTGGTCC TCTTCTCGGT TGGGATCCTC CTTATCCTAA GTCGCAGGTG 480
 CAAGTGCAGT TTCAATCAGA AGCCCCGGGC CCCAGGAGAT GAGGAAGCCC AGGTGGAGAA 540
 45 CCTCATCACC GCCAATGCAA CAGAGCCCCA GAAAGCAGAG AACTGAAGTG CAGCCATCAG 600
 GTGGAAGCCT CTGGAACCTG AGGCGGCTGC TTGAACCTTT GGATGCAAAT GTCGATGCTT 660
 AAGAAAACCG GCCACTTCAG CAACAGCCCT TTCCCCAGGA GAAGCCAAGA ACTTGTGTGT 720
 50 CCCCCACCCT ATCCCCCTCTA ACACCATTC CACACCTGAT GATGCAACTA ACAC'TGCCT 780
 CCCCAGTCA GCCTGCGGTC CTGCCCACCT CCCGTGATGT GTGTGTGTGT GTGTGTGTGT 840
 55 GTGACTGTGT GTGTTTGCTA ACTGTGGTCT TTGTGGCTAC TTGTTGTGG ATGGTATGT 900
 GTTGTGTAGT GAACTGTGGA CTCGCTTTC CAGGCAGGGG CTGAGCCACA TGGCCATCTG 960
 CTCCTCCCTG CCCCCGTGGC CCTCCATCAC CTTCTGCTCC TAGGAGGCTG CTTGTTGCC 1020
 60

	GAGACCAGCC CCCTCCCCTG ATTTAGGGAT GCGTAGGGTA AGAGCACGGG CAGTGGTCTT	1080
	CAGTCGTCTT GGGACCTGGG AAGGTTTGCA GCACTTTGTC ATCATTCTTC ATGGACTCCT	1140
-5	TTCACTCCTT TAACAAAAAC CTGCTTCCT TATCCCACCT GATCCCAGTC TGAAGGTCTC	1200
	TTAGCAACTG GAGATACAAA GCAAGGAGCT GGTGAGCCCA GCGTTGACGT CAGGCAGGCT	1260
10	ATGCCCTTCC GTGGTTAATT TCTTCCCAGG GGCTTCCACG AGGAGTCCCC ATCTGCCCCG	1320
	CCCCCTCACA GAGCGCCCGG GGATTCCAGG CCCAGGCTT CTA CTCTGCC CCTGGGGAAT	1380
	GTGTCCCCTG CATATCTTCT CAGCAATAAC TCCATGGGCT CTGGGACCCT ACCCCTTCCA	1440
15	ACCTTCCCTG CTTCTGAGAC TTCAATCTAC AGCCCAGCTC ATCCAGATGC AGACTACAGT	1500
	CCCTGCAATT GGGTCTCTGG CAGGCAATAG TTGAAGGACT CCTGTTCCGT TGGGGCCAGC	1560
20	ACACCGGAT GGATGGAGGG AGAGCAGAGG CCTTTGCTTC TCTGCCCTACG TCCCCCTAGA	1620
	TGGGCAGCAG AGGCAACTCC CGCATCCTTT GCTCTGCCTG TCRGTGGTCA GAGCGGTGAG	1680
	CGAGGTGGGT TGGAGACTCA GCAGGCTCCG TGCAGCCCTT GGGAACAGTG AGAGGTGAA	1740
25	GGTCATAACG AGAGTGGGAA CTCAACCCAG ATCCCGCCCC TCCTGTCTC TGTGTTCCTG	1800
	CGGAAACCAA CCAAACCGTG CGCTGTGACC CATTGCTGTT CTCTGTATCG TGATCTATCC	1860
30	TCAACAACAA CAGAAAAAG GAATAAAATA TCCTTTGTTT CCTAGTGAAA AAAAAAAAAA	1920
	AAAAAAAAA AAAAAAAAAA CTCGA	1945

35

(2) INFORMATION FOR SEQ ID NO: 165:

(i) SEQUENCE CHARACTERISTICS:

40

- (A) LENGTH: 2933 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 165:

45

	GGGTGACCC ACGCGTCCGG CAGCCGTCGT TTGAGTCGTT GCTGCCGCTG CCCCCTCCCG	60
	GATCAGGAGC CAGTGTATAC CGCCGCCCA CCGCCTTGGT GCCGCTAGAG GAAACGAGAA	120
50	GGAGGCCGCC TGC GGTTTGT CGCCGCAGCT CGCCMCYGY CYGGRAGAGC CGAGCCCCGG	180
	CCCAGTCGGT CGCTGCCAC CSCTCGTAGC CGTTACCCGC GGGCCGCCAC AGCCGCCGCG	240
	CGGGAGAGGC GCGCGCCATG GCYTCTGGAG CCGATTCAAA AGGTGATGAC CTATCAACAG	300
55	CCATTCTCAA ACAGAAGAAC CGTCCAATC GGTAAATTGT TGATGAAGCC ATCAATGAGG	360
	ACAACAGTGT GGTGTCTTG TCCAGCCCA AGATGGATGA ATTGCAGTTG TTCCGAGGTG	420
60	ACACAGTGT GCTGAAAGGA AAGAAGAGAC GAGAAGCTGT TTGCATCGTC CTTTCTGATG	480

	ATACTTGTTT	TGATGAGAAG	ATTCGGATGA	ATAGAGTTGT	TCGGAATAAC	CTTCGTGTAC	540
	GCCTAGGGGA	TGTCATCAGC	ATCCAGCCAT	GCCCTGATGT	GAAGTACGGC	AAACGTATCC	600
5	ATGTGCTGCC	CATTGATGAC	ACAGTGAAG	GCATTACTGG	TAATCTCTTC	GAGGTATAAC	660
	TTAAGCCGTA	CTTCCTGGAA	GCGTATCGAC	CCATCCGGAA	AGGAGACATT	TTTCTTGTCC	720
10	GTGGTGGGAT	GCGTGTCTGT	GAGTTCAAAG	TGGTGGAAAC	AGATCCTAGC	CCTTATTGCA	780
	TTGTTGCTCC	AGACACAGTG	ATCCACTGCG	AAGGGGAGCC	TATCAAACGA	GAGGATGAGG	840
	AAGAGTCCTT	GAATGAAGTA	GGGTATGATG	ACATTGGTGG	CTGCAGGAAG	CAGCTAGCTC	900
15	AGATAAAGGA	GATGGTGGAA	CTGCCCTGTA	GACATCCTGC	CCTCTTTAAG	GCAATTGGTG	960
	TGAAGCCTCC	TAGAGGAATC	CTGCTTTACG	GACCTCCTGG	AACAGGAAAG	ACCCTGATTG	1020
20	CTCGAGCTGT	AGCAAATGAG	ACTGGAGCCT	TCTTCTTCTT	GATCAATGGT	CCTGAGATCA	1080
	TGAGCAAATT	GGCTGGTGAG	TCTGAGAGCA	ACCTTCGTAA	AGCCTTTGAG	GAGGCTGAGA	1140
	AGAATGCTCC	TGCCATCATC	TTCATPGATG	AGCTAGATGC	CATCGCTCCC	AAAAGAGAGA	1200
25	AAACTCATGG	CGAGGTGGAG	CGGCGCATTG	TATCACAGTT	GTTGACCCTC	ATGGATGGCC	1260
	TAAAGCAGAG	GGCACATGTG	ATTGTTATGG	CAGCAACCAA	CAGACCCAAC	AGCATTGACC	1320
30	CAGCTCTACG	GCGATTGCGT	CGCTTTGACA	GGGAGGTAGA	TATTGGAATT	CCTGATGCTA	1380
	CAGGACGCTT	AGAGATTCTT	CAGATCCATA	CCAAGAACAT	GAAGCTGGCA	GATGATGTGG	1440
	ACCTGGAACA	GTAGCCAATG	AGACTCACGG	GCATGTGGGT	GCTGACTTAG	CAGCCCTGTG	1500
35	CTCAGAGGCT	GCTCTGCAAG	CCATCCGCAA	GAAGATGGAT	CTCATTGACC	TAGAGGATGA	1560
	GACCAITGAT	GCCGAGGTCA	TGAACTCTCT	AGCAGTTACT	ATGGATGACT	TCCGGTGGGC	1620
40	CTTGAGCCAG	AGTAACCCAT	CAGCACTGCG	GGAAACCGTG	GTAGAGGTGC	CACAGGTAAC	1680
	CTGGGAAGAC	ATCGGGGGCC	TAGAGGATGT	CAAACGTGAG	CTACAGGAGC	TGGTCCAGTA	1740
	TCCTGTGGAG	CACCCAGACA	AATTCTTGAA	GTTTGGCATG	ACACCTTCCA	AGGGAGTTCT	1800
45	GTTCTATGGA	CCTCCTGGCT	GTGGGAAAAC	TTTGTGCGCC	AAAGCCATTG	CTAATGAATG	1860
	CCAGGCCAAC	TTCATCTCCA	TCAAGGGTCC	TGAGCTGCTC	ACCATGTGGT	TTGGGGAGTC	1920
50	TGAGGCCAAT	GTCAGAGAAA	TCTTTGACAA	GGCCCCGCAA	GCTGCCCCCT	GTGTGCTATT	1980
	CTTTGATGAG	CTGGATTGCA	TGCCCCAAGC	TCGTGGAGGT	AACATTGGAG	ATGGTGGTGG	2040
	GGCTGCTGAC	CGAGTCATCA	ACCAGATCCT	GACAGAAATG	GATGGCATGT	CCACAAAAAA	2100
55	AAATGTGTTT	ATCATTGGCG	CTACCAACCG	GCCTGACATC	ATTGATCCTG	CCATCCTCAG	2160
	ACCTGGCCGT	CTTGATCAGC	TCATCTACAT	CCCACTTCCT	GATGAGAAGT	CCCGTGTTCG	2220
60	CATCCTCAAG	GCTAACCTGC	GCAAGTCCCC	AGTTGCCAAG	GATGTGGACT	TGGAGTTCTT	2280

5 GGCTAAATG ACTAATGGCT TCTCTGGAGC TGACCTGACA GAGATTTGCC AGCGTGCTTG 2340
 CAAGCTGGCC ATCCGTGAAT CCATCGAGAG TGAGATTAGG CGAGAACGAG AGAGGCAGAC 2400
 AAACCCATCA GCCATGGAGG TAGAAGAGGA TGATCCAGTG CCTGAGATCC GTCGAGATCA 2460
 CTTTGAAGAA GCCATGCGCT TTGCGCGCCG TTCTGTCACT GACAATGACA TTCGGAAGTA 2520
 10 TGAGATGTTT GCCCAGACCC TTCAGCAGAG TCGGGGCTTT GGCAGCTTCA GATTCCCTTC 2580
 AGGGAACCAG GGTGGAGCTG GCCCCAGTCA GGGCAGTGGA GCGGCACAG GTGGCAGTGT 2640
 ATACACAGAA GACAATGATG ATGACCTGTA TGGCTAAGTG GTGGTGGCCA GCGTGCAGTG 2700
 15 AGCTGGCCTG CCTGGACCTT GTTCCCTGGG GGTGGGGGCG CTGCCCAGG AGAGGGACCA 2760
 GGGGTGCGCC CACAGCCTGC TCCATTCTCC AGTCTGAACA GTTCAGCTAC AGTCTGACTC 2820
 20 TGGACAGGGG GTTCTCTGTTG CAAAAATACA AAACAAAAGC GATAAAATAA AAGCGATTTT 2880
 CATTTGGTAA AAAAAAAAAA AAAAAAAAAAT CCGGGGGGGG GCCCGAACCA TTT 2933

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(2) INFORMATION FOR SEQ ID NO: 166:

30 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 2243 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 166:

TCGGAGAGCC GCGGGCGNG CGCCTCTCGG CCAGGAAGCG CCTCTTGGAC GCGTGTNACC 60
 GATGCCCAGA AGTGGCCTTG GGCTGGGGAT CACCATAGCT TTTCTAGCTA CGCTGATCAC 120
 40 GCAGTTTCTC GTGTATAATG GTGTCTATCA GTATACATCC CCAGATTTCC TCTATATTGG 180
 TTCTTGGCTC CCTTGTATAT TTTTCTCAGG AGGCGTCACG GTGGGGAACA TAGGACGACA 240
 45 GTTAGCTATG GGTGTTCTTG AAAAGCCCCA TAGTGATTGA GTCTTCAAAA CCACCGATTG 300
 TGAGAGCAAG GAAGATTTTG GAAGAAAATC TGAATGTGGA TTATGACAAA GATTATCTTT 360
 TTTCTTAAGT AATCTATTTA GATCGGGCTG ACTGTACAAA TGACTCCTGG AAAAACTCT 420
 50 TCACCTAGTC TAGAATAGGG AGGTGGAGAA TGATGACTTA CCCTGAAGTC TTCCCTTGAC 480
 TGCCCCCACT GCGCCTGTC TGTGCCCTGG AGCATTTCTG CCAGGCTACG TGGGTTTCAGG 540
 55 CAGGTGGCAG CTTCCCAAGT ATTCGATTTT ATTCATGTGA TTAACAACAG TTGCCATATT 600
 TCAAAGCCTT GAACTAAGAC TCAATTACCA ACCCGCAGTT TTGTGTCACT GCCCAAAGGA 660
 GGTAGGTTGA TGGTGCTTAA CAAACATGAA GTATGGTGTA ATAGGAATAA TATTTATCCA 720

60

	AAAGATTTTT AAAAATAGGG CTGTGTTTAA AAAAAAAAC AAAACARGAA AAGCAGCAGT	780
	GATTATAGAG AGGTCACACT CTAAGTGGGG TCGCGGCGTG GCCACGCTTC ACGGTCACGC	840
-5	TCGTCCGTCC TGCAGTGGCG TGTTTACATG GTCACACGTG TGTGTATCAC CAGTGGGTCA	900
	ACTGCTTGTC ATTCCTCCCG TGGCAGTTTG TGTAGACAAT CTTACTGAGC AAAAGGCAAT	960
10	GAAAAGTCTT GGTTCACACA CTGCGATATA TTGGAATTTT CACCTCAGTT TATGAAGTTT	1020
	ATTTGCAAAAT CCATAGTCAT CTAAGAATGA ATACCTGTCT GCCATGTATT TCAATCTTAG	1080
	TGAGCCAAAA TTGTTTGTTT GTTACTACAG AATAGAGATG ACTGTTTTTT GCCACAGCCC	1140
15	TATGGRATTT GCAATCTGTG ATTGCCCTGTG AAAAAGGAGA GTGCATATGG CACTGCATTA	1200
	AACGTGTGGT GTTCTAGTC AATGATATTG GTGAGCACAA TGTATTCATT TAATGGCATA	1260
20	GACCATACCA GACCTAATTT GCAAGTATTG GGTCTTAAAC TTCAAGTGCA ATGTATATGA	1320
	AAACCAATCT GAGCCTTGTA TCTCTTAAAT ATTTATTTTT TTTAACGTGT GAGATGTTCTG	1380
	AGAGAAGGTT CTCCATTCAT TTCAGTGCTG CCTGGAGGAA ACTCGGCAAT GATTTCTTTC	1440
25	AGTTGTGAAG TTCCTTTCGT GTTACACCCT CCACTGAACC CTCAACCTTC GAAATACTCC	1500
	AGTTTGTGGG GTTGGTCAT TTTACTTAT AAATTTACCT TTTTGTATTT TGCAATTTAC	1560
30	ATGTGTTTGG TTTGTTTTAA ATTCTGTGAA AGTGGCTTGA TTAAAAGACT CCTTTTAAAT	1620
	GGAAGCCACC AGTCAGCAGA ATGGAAGCTT AGAGGAACTT GCCTGTGAGC GCTGGTCTTT	1680
	GTGTTTGGTT TTGTGATGTA ACGATCTTTG CTGGGGTTTT TTGCTTTGTT TTGAGGGAAA	1740
35	TGCTTGGAG TAAATTTTAA GTTCCTGGAG TTAATTTGTT TTACAGGAAT TTTGTTTTTT	1800
	AAAAAATAG GATCATCTCG AACTTTGGAA TGACCCCTT ATATATTTTC TGAAAATGAA	1860
40	AACAGTTACA TGAAAAAAT TTCCAATGAA GATGTCAGCA TTTTATGAAA AACCAGAAGT	1920
	TATTAGATGA AAGCAGCGAG TGAATCTTTA AAACAGACTT GATCACGCAC ACACAATAAG	1980
	TCTTCTCTC CGAAACCGGA AGTAAATCTA TATCTGTTAG AAATAATGTA GCCAAAAGAA	2040
45	TGTAAATTTG AGGATTTTTT TGCCAATAGT TTATAGAAAA TATATGAACC AAAGTGATTT	2100
	GAGTTTGTA AAATGTAAAA TAGTATGAAC AAAATTTGCA CTCTACCAGA TTTGAACATC	2160
50	TAGTGAGGTT CACATTCATA CTAAGTTTTC AACATTGTGT TCTTTTGTCA TTCATTTTTT	2220
	ACTTTTATTA AAGGTTCAAA ACC	2243

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(2) INFORMATION FOR SEQ ID NO: 167:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1816 base pairs

(B) TYPE: nucleic acid

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(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 167:

-5 GGTGGGNAGC TTTNAATTTC CCCTTACWGG GGCGCTNTAA GGGGAAACCT TCCCAGGAATT 60
 TTCGGGTGCG CCCACGCGTC CGGCCAGCCT AGGAGAAGAA GTTCGTAGTC CCAGAGGTGA 120
 10 GGCAGGAGGC GGCAGTTTCT GGCGGGTGAG GGCGGAGCTG AAGTGACAGC GGAGGCGGAA 180
 GCAACGGTCG GTGGGGCGGA GAAGGGGGCT GGCCCCAGGA GGAGGAGGAA ACCCTTCCGA 240
 15 GAAAACAGCA ACAAGCTGAG CTGCTGTGAC AGAGGGGAAC AAGATGGCGG CGCCGAAGGG 300
 GAGCCTCTGG GTGAGGACCC AACTGGGGCT CCCGCCGCTG CTGCTGCTGA CCATGGCCTT 360
 GGCCGGAGGT TCGGGGACCG CTTGGGCTGA AGCATTTGAC TCGGTCTTGG GTGATACGGC 420
 20 GTCTTGCCAC CGGGCCTGTC AGTTGACCTA CCCCTTGCAC ACCTACCCCTA AGGAAGAAGA 480
 GTTGATACCA TGTACAGAG GTTGCAGGCT GTTTTCAATT TGTCAATTG TGGATGATGG 540
 AATTGACTTA AATCGAATA AATTGGAATG TGAATCTGCA TGTACAGAAG CATATTCCCA 600
 25 ATCTGATGAG CAATATGCTT GCCATCTTGG KTGCCAGAAT CAGCTGCCAT TCGCTGAACT 660
 GAGACAAGAA CAACTTATGT CCCTGATGCC AAAAATGCAC CTACTCTTTC CTCTAACTCT 720
 30 GGTGAGGTCA TTCTGGAGTG ACATGATGGA CTCCGCACAG AGCTTCATAA CCTCTTCATG 780
 GACTTTTAT CTTCAAGCCG ATGACGGAAA AATAGTTATA TTCCRGTTA AGCCAGRAA 840
 TCCCAGGTAC GCACCACATT TGGAGCCAGG AGCCCTACCA AATTTGRGRG RAWCMCTCT 900
 35 AAGCAAAATG TCNTCAKMT CGSMAATGAG AAATTACAAA GCGCACAGGA ATTTTCTTGA 960
 AGATGGAGAA AGTGATGGCT TTTTAAGATG CCTCTCTCTT AACTCTGGGT GGATTTTAAC 1020
 40 TACAACCTCT GTCTCTCGG TGATGGTATT GCTTTGGATT TGTGTGCAA CTGTGTGCTA 1080
 CACGCTGTG GACGCAGTAT AGTTTCCCTC TGAGAAGCTG AGTATCTATG GTGACTTGGA 1140
 GTTTATGAAT GAACAAAAGC TAAACAGATA TCCAGCTTCT TCTCTTGTGG TTGTTAGATC 1200
 45 TAAAACTGAA GATCATGAAG AAGCAGGGCC TCTACCTACA AAAGTGAATC TTGCTCATTC 1260
 TGAAATTTAA GCATTTTCT TTTAAAAGAC AAGTGAATA GACATCTAAA ATTCCACTCC 1320
 50 TCATAGAGCT TTTAAAATGG TTTCATTGGA TATAGGCCTT AAGAAATCAC TATAAAATGC 1380
 AAATAAAGTT ACTCAAATCT GTGAAAAAAA AAAAAAAAAC TCGAGGGGGG 1440
 GCCCGTTACC AAKTCGCCCT ATWGTGADTB GTATTMTTAT TTTACTAATA TCTGTAGCTA 1500
 55 TTTTGTTTTT KGCTTKGGTT ATKGTTTTTY TCCCTTYTCT WAGCTATRAG CTGATCATKG 1560
 CYSCTTCTCA CCTCCTGCCA TGATACTGTC AGTTACCTTA GTTAACAAGC TGAATATTTA 1620
 60 GTAGAAATGA TGCTTCTGCT CAGGAATGGC CCACAAATCT GTAATTTGAA ATTTAGCAGG 1680

AAATGACCTT TAATGACACT ACATTTTCAG GAACTGAAAT CATTAAAATT TTATTTGAAT 1740
AATTATGTGC TGAAAAAAAA AAAAAAAAAA AMMRARASK RRWWACTCGA GGGGGGGCCC 1800
-5 GGTACCCNAT TCGCCG 1816

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(2) INFORMATION FOR SEQ ID NO: 168:

(i) SEQUENCE CHARACTERISTICS:

15

- (A) LENGTH: 945 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 168:

20

AGAAACCGTT GATGGGACTG AGAAACCAGA GTTAAACCTT CTTTGGAGCT TCTGAGGACT 60
CAGCTGGAAC CAACGGGCAC AGTTGGCAAC ACCATCAACT TCTCCCAAGC AGAGAAACCC 120
25 GAACCCACCA ACCAGGGGCA GGATAGCCTG AAGAAACATC TACACGCAGA AATCAAAGTT 180
ATTGGGACTA TCCAGATCTT GTGTGGCATG ATGGTATIGA GCTTGGGGAT CATTTTGGCA 240
TCTGCTTCCT TCTCTCCAAA TTTTACCCAA GTGACTTCTA CACTGTTGAA CTCTGCTTAC 300
30 CCATTCATAG GACCCTTTT TTTTATCATC TCTGGCTCTC TATCAATCGC CACAGAGAAA 360
AGGTTRACCA AGCTTTTGGT GCATAGCAGC CTGGTTGGAA GCATTCTGAG TGCTCTGTCT 420
35 GCCCTGGTGG GTTTCATTAT CCTGTCTGTC AAACAGGCCA CCTTAAATCC TGCCTCACTG 480
CAGTGTGAGT TGGACAAAAA TAATATACCA ACAAGAAGTT ATGTTTCTTA CTTTATCAT 540
GATTCACTTT ATACCACGGA CTGCTATACA GCCAAAGCCA GTCTGGCTGG AWCTCTCTCT 600
40 CTGATGCTGA TTTGCACTCT GCTGGAATTC TGCCTAGCTG TGCTCACTGC TGTGCTGCGG 660
TGGAAACAGG CTTACTCTGA CTTCCCTGGG AGTGTACTTT TCCTGCCCTCA CAGTTACATT 720
45 GGTAAATCTG GCATGTCCTC AAAAATGACT CATGACTGTG GATATGAAGA ACTATTGACT 780
TCTTAAGAAA AAAGGGAGAA ATATTAATCA GAAAGTTGAT TCTTATGATA ATATGGAAAA 840
GTTAACCATT ATAGAAAAGC AAAGCTTGAG TTTCTTAAAT GTAAGCTTTT AAAGTAATGA 900
50 ACATTAAAAA AAACCATTAT TCACTGTCA TTAAAGATA ATGTG 945

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(2) INFORMATION FOR SEQ ID NO: 169:

(i) SEQUENCE CHARACTERISTICS:

60

- (A) LENGTH: 902 base pairs
(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 169:

-5
GGCAGAGCCA CAGGAAGGAT GAGGAAGACC AGGCTCTGGG GGCTGCTGTG GATGCTCTTT 60
GTCTCAGAAC TCCGAGCTGC AACTAAATTA ACTGAGGAAA AGTATGAACT GAAAGAGGGG 120
10 CAGACCCTGG ATGTGAAATG TGA CTACACG CTAGAGAAGT TTGCCAGCAG CCAGAAAGCT 180
TGGCAGATAA TAAGGGACCG AGAGATGCCC AAGACCCTGG CATGCACAGA GAGGCCTTCA 240
AAGAATTCCC ATCCAGTCCA AGTGGGGAGG ATCATACTAG AAGACTACCA TGATCATGGT 300
15 TTACTGCGCG TCCGAATGGT CAACCTTCAA GTGAAGATT CTGGACTCTA TCAGTGTGTG 360
ATCTACCAGC CTCCAAGGA GCCTCACATG CTGTTGATC GCATCCGCTT GGTGGTGACC 420
20 AAGGGTTTTT CAGGGACCCC TGGCTCCAAT GAGAATTCTA CCCAGAATGT GTATAAGATT 480
CCTCCTACCA CACTAAGGC CTGTGCCCCA CTCTATACCA GCCCCAGAAC TGTGACCCAA 540
GCTCCACCCA AGTCAACTGC CGATGTCTCC ACTCCTGACT CTGAAATCAA CCTTACAAAT 600
25 GTGACAGATA TCATCAGGGT TCCGGTGTTC AACATTGTCA TTCTCCTGGC TGGTGGATTC 660
CTGAGTAAGA GCCTGGTCTT CTCTGTCTG TTGCTGTCA CGCTGAGGTC ATTTGTACCC 720
30 TAGGCCACG AACCCACGAG AATGTCTCT GACTTCCAGC CACATCCATC TGGCAGTTGT 780
GCCAAGGGAG GAGGGAGGAG GTAAAAGGCA GGGAGTTAAT AACATGAATT AAATCTGTAA 840
35 TCACCRGCTA AAAAAAAAAA AAAAAAACN CGANCCTNGG TTTTCAGCTC CATCAGCTCC 900
TT 902

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(2) INFORMATION FOR SEQ ID NO: 170:

(i) SEQUENCE CHARACTERISTICS:

45

(A) LENGTH: 1883 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 170:

50

AGAAAACAAC TGAAAACCA CATTTTCTA CATACTAGT GGGAGGTAGC TGAGAACTTG 60
GCACTGCGCA CACATACTAG GTTGAAAGAG AGTTGAGGAA ACCAGAAGGC CAAGTGATC 120
55 TGCTGGCAAA CCCTGAACCT GTCTCTGCG CTGCTCTAC AGTTCTGAAG TTGAAAATCC 180
TTTTCATGCC TAGCATCTGC TTGAGTTATA AACCCCAAGG CAGCCATGTC ATAGACTAGT 240
GTTTACTCTT GTTTTGACTT TGTTTAAATG CTTCTAAGA CCCAAGTGCC TCCTGCTGTT 300
60

	TCCTCCTTTG TGGTAGCCTC TGGCCATCTG GGACCTCAAT CCCAGCTTT CCCACTTTCA	360
	GCAGTCCTTT GCTCTCTTTG CTTCTACCTC AAATAGCCCC AGGAGTGGGC TTTAGTCTCC	420
-5	AATATGGAGC ATYTCAAGCT TCTCCTGGGG GATGGGGATT GGGATGGGCA GAATCTGTTT	480
	TGGWCTCCG GGTATTTCC AGTGGGTGTA AAAGCAGAGC TGGGCCTTTC CCTCTCTTAT	540
10	CCCTGAGGGT GGGTAAGAAG GACTGTATCT ACACCTGTTT TCCCTACCT TCTCTTTTGT	600
	TAGGGAGGCC TCATTCTAAG TTCCTCAAGA GAGTCCTTGG CTTAAAGCTG TAGCAAGGGT	660
	GTGCTAGGTG GGGGATTTGG AGCAAAACCG TCGAGTAGGC ATGATACTGG TATGGAGTGG	720
15	GCCTGCAAAA TCAGACAGAA ATGGCTTGAG AAGCCGCAGG GGAGCATGCC TGTCTCTCAG	780
	TGATAGAGTA TGGGAGGGAC CTCCCTAGCT TGGAAAATGA GAATTGAAGG GGTATGAAC	840
	AAATAGGATG CCTAGTTGAG GATGTTCCCA AAGTTTGTGTC CAATCTTATC ATTAGTAGAT	900
20	TTTATAAGCC ACAGAGACAA ACCAGAAACG GAATAATGTT ACTTTGGATG CTTTATTTTT	960
	TTGTTCTAGG TGTGGCTTTG TACATGCAGA AGAATGCTAT ATGCTGCACA TTTTGCCTTT	1020
25	AAAGTCTTAC GACTTTCCCC ATTTTAGTCT AATGGGAAGA TACAGATGTG CAAGTCTGCT	1080
	TTTTTGTTTT TTGTTATTAT TTTTTTTTTT TTGCTCTGTG TTATGGACAT TTTTCTAGAT	1140
30	GCACAGAAGT GGAGAGGATG GTCCTTGGAC CCCATGTGTC CATCACCTAG CTGCATCACT	1200
	TATCAGCTAT GGTCAACCTG GTTTCATCTG TATCTCTCTC TTTTCACCTG TATTGTTTAT	1260
	TGAAAATCCA AGACACTATG CCAATGCAAC CGTGACTION TTGGGAGATT GGTAGTCTCT	1320
35	TTTGATGGTG ATAGTGATGG GTTGCATCTAT CATAATCACA TCAGGTCTGC TTTTGTCTTT	1380
	TAATGTTAAC TAATGAAGTT CCAGAGATGG GCCTTAGAAA TGTGTTTTAA GAATTAACAA	1440
40	GGAGTCTCAA AAAGAAATGA GAGGGATGCT TCCTTTCCCC TTGCATCTAC AAAACAAGAG	1500
	AGAGACTGTT CTGTTGTAAG ACTCTTTCAA AAATCTGAT ATGGTAAGGT ACTTGAGACC	1560
	CTTCACCAGA ATGTCAATCT TTTTTTCTGT GTAACATGGA AACTTGTGTG ACCATTAGCA	1620
45	TTGTTATCAG CTTGTACTGG TCTCATAACT CTGGTTTTGG AAGAATAATT TGGAAATGT	1680
	TGCTGTGTTT TGTGAAAATA ACCTCCCCAA AATAATTAGT AACTGGTTGT TCTACTTGGT	1740
50	AATTTGACAC CCTGTTAATA ACGCAATTAT TTCTGTGTTT TTAAACAGTA TAAATAGTTG	1800
	TAAGTTTGCA TGCATGATGG AAAAAATAAA ACCTGTATCT CTGTTAAAAA AAAAAAAAAA	1860
	AAAAAAAAAA AAAAAAAAAA AAA	1883

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(2) INFORMATION FOR SEQ ID NO: 171:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2100 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

-5

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 171:

	TACTTTTAGA TTTACTGCCT TCAAAAAGTG CCTATTCTGA GCAACATAAA CGTTATTTCCT	60
10	TACATATGTA TGTACACACG GTACCCAGAG TCGTACTGTG GCAGCCTTCA AAAACATACC	120
	ATCAGAAAGA GTAGGTGCTG AGATAAGGNA ACTTTGCCAA ATGNAAGAAA GTCACCTCACT	180
15	TCCAATATCC CCTCTTCAAG CGGCTACCGT GRAASGGGCT GCAAACACAT TCCCTGAGCA	240
	TCCCTTGCTG ATACAGCTTC TTTATATTTA TATCCTACTG GATGGTAGCA TATTGCTAAG	300
	GTTTCCTGTA CTCTGCTTCA AGGGAATGTA AGYTTTATGG CATTGAAACA TTTAGGAAAA	360
20	AAAAAGATGT TTAAGAGAAT TAATAGAGCC GTAGTCTGTA TTAGGATGTG TGTCAATATG	420
	GTGTTCTATA AACTAAGCAT CGGTGGGTTT AGAGTGTTAA AGTGTGAGCA CATTCTTCT	480
25	CCTTTTGTCT CTCAGGCTAA CATGAGAGAA AATAGAAAAG TCTTGGCTGT GGGGATTGGA	540
	AGCTCAGGGG GCCAAATGTC CTTGCCAGAT CCTTAGAGCA TTACTTTGAC TCCTAAAAAT	600
	AGTAGTGTAT GTTATTTGAT GGCTTTTGT TCCATAGTTC CATCACTGAC AAAACTGTCA	660
30	ATACTGTTGA TGGAGCAGCA GCATAGCCTA GAGTGATGCA TTCTTACCCA GAGGTGGCAA	720
	TAGGAGAGGG TCCATGTAAA TAGGACGAGG TAGACAGTGC ATGATTGTAG GAGAAGGGTT	780
35	GAAGGGAGGA CATGATTCCA AAAAAGATCG TTCTCAATGT GTCGTCTGAC TCAACCAGCT	840
	GGCAGATTAC ACTTGCCAAG TCGTTCCCTT TCCTTCTAAG TCAGTTGGCT CCATATTAC	900
	TTGAATATGC CTCTGTTTGG GCAAAGCAAG ATACCTCCAC TTAACCTTTA TCCAAGGAAG	960
40	CTCTTGGTGT CCTCTTGGTC ATAAAGTTGT CTCCTACCTA ACCCAGTTTT ACCAAATGGA	1020
	AGTAAAAGGG GACAACTAT GGAAGATGGA CTCCATGCCA TTGCAGTCAG CCACCATTCT	1080
45	CTTTTCCATA TAAGGAGCCC CATTACATAA GCTACGGGTG AGGTTGGAAC AGCTATGTTT	1140
	CATAATTTCA AGAGTGTGAC CACCTGCTC TAGTCATCAT CATTGGATGA ATCCAGTTGA	1200
	CTCTTTGGCA AAAGGGTGAT ACTTTTCACT AAAAATGCCT ACTCTTCTG TTGATGTTCC	1260
50	TTTTCTGTTT TTACCTTGTC CAATTTCCAC ACTAGTCATT TTTTTTATTT TTTAGAGGAT	1320
	CAGATTTTAG CGCTGAAAAA TGAGTTCAAA AATTTCAGTG TAATGTCATA AGGATGTTGG	1380
55	GATACAGAGA TTTTTTTTTT CCTTGAAAC AAATGGACTG GGAAGAAACA CAGCATGGCT	1440
	TTGCTCTGAG TTTCATCTG ATGATTATGA CCATGGAAGA TAGTCTTATG TAAAGGTTAA	1500
	ATGGTGTTTA CAAGTGGATA GATAAGGCGG AGATGGTGAG AAGCCGGGTT TTCTCTATGC	1560
60	TAAATGTGTC TACTAAGAGC AGCACTTCCT ACTAGCTAAG CACAATCATA GCCCCACCGT	1620

5 GATGAGCTGC TAGTCTGAAT AACATTCCCT GACTTAGGGA AAGGCACACA AAAACATATA 1680
 AAGAATATGT CTATTTTCAT ATGTGTGATA CTGACAGAGC CATGGTATTC CTAAAATATA 1740
 GGTTCCTCTT TTTCTCTGTA TTCTTAGCAA ATTGCATTTA TTCCTACAT TACAAACCAT 1800
 CACTGATGTA TCCAAAATAG CACACATAGT TCAGTATGAA AATAAGAGAA TAAAATCTGT 1860
 10 TATAAGCAAG TGATTTAGGT ATTTTCTTTT GTGTTTATGC ATTATCTGAC TATATTAAAA 1920
 CCTGTTTTC TATTTACCTT CTATCAGTTT TCTCTACCAA TTATGTTTTT TCAATGCTCT 1980
 ATAAGAATGA ATATGGAAAT TATATTCTT TTTTCTGTAA AAGAGTTGCA ACTACTTTAT 2040
 15 TATATTAGA AATCCAATAA ACTTCTTATT ACATTAAAAA AAAAAAAAAA AAAACTCGAA 2100

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(2) INFORMATION FOR SEQ ID NO: 172:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 1930 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 172:

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CCTTTGANTG TGGTCCCGGG TGCNGATTGG CAGCGCTCC GCCGCGGCTC GTGGTTGTCC 60

CGCCATGGCA CTGTCGCGGG GGCTGCCCGG GGAGCTGGCT GAGGCGGTGG CCGGGGGCCG 120

35

GGTGCTGGTG GTGGGGGCGG GCGGCATCGG CTGCGAGCTC CTCAAGAATC TCGTGCTCAC 180

CGGTTTCTCC CACATCGACC TGATTGATCT GGATACTATT GATGTAAGCA ACCTCAACAG 240

40

ACAGTTTTTG TTTCAAAGA AACATGTTGG AAGATCAAAG GCACAGGTG CCAAGGAAAG 300

TGTACTGCAG TTTTACCGA AAGCTAATAT CGTTGCCTAC CATGACAGCA TCATGAACCC 360

TGACTATAAT GTGGAATTTT TCCGACAGTT TATACTGGTT ATGAATGCTT TAGATAACAG 420

45

AGCTGCCCGA AACCATGTTA ATAGAATGTG CCTGGCAGCT GATGTTCTTC TTATTGAAAG 480

TGGAACAGCT GGGTATCTTG GACAAGTAAC TACTATCAA AAGGGTGTGA CCGAGTGTTA 540

50

TGAGTGTGAT CCTAAGCCGA CCCAGAGAAC CTTTCTGGC TGTACAATTC GTAACACACC 600

TTCAGAACCT ATACATTGCA TCGTTTGGGC AAAGTACTTG TTCAACCAGT TGTTTGGGGA 660

AGAAGATGCT GATCAAGAAG TATCTCCTGA CAGAGCTGAC CCTGAAGCTG CCTGGGAACC 720

55

AACGGAAGCC GAAGCCAGAG CTAGAGCATC TAATGAAGAT GGTGACATTA AACGTATTTT 780

TACTAAGGAA TGGGCTAAAT CAACTGGATA TGATCCAGTT AAACCTTTTA CCAAGCTTTT 840

60

TAAAGATGAC ATCAGGTATC TGTTGACAAT GGACAACTA TGGCGGAAAA GGAAACCTCC 900

	AGTTCCGTTG GACTGGGCTG AAGTACAAAG TCAAGGAGAA GAAACGAATG CATCAGATCA	960
	ACAGAATGAA CCCAGTTAG GCCTGAAAGA CCAGCAGGTT CTAGATGTAA AGAGCTATGC	1020
- 5	ACGTCTTTT TCAAAGAGCA TCGAGACTTT GAGAGTTTAT TTAGCAGAAA AGGGGGATGG	1080
	AGCTGAGCTC ATATGGGATA AGGATGACCC ATCTGCAATG GATTTTGTC CCTCTGCTGC	1140
10	AAACCTCAGG ATGCATATTT TCAGTATGAA TATGAAGAGT AGATTTGATA TCAAATCAAT	1200
	GGCAGGGAAC ATTATTCTCT CTATTGCTAC TACTAATGCA GTAATTGCTG GGTGATAGT	1260
	ATTGAAGGA TTGAAGATTT TATCAGGAAA AATAGACCAG TGCAGAACAA TTTTITGAA	1320
15	TAAACAACCA AACCCAAGAA AGAAGCTTCT TGTGCCTTGT GCACTGGATC CTCCCAACCC	1380
	CAATTGTTAT GTATGTGCCA GCAAGCCAGA GGTGACTGTG CGGCTGAATG TCCATAAAGT	1440
20	GACTGTTCTC ACCTTACAAG ACAAGATACT GAAAGAAAAA TTGCTATGG TAGCACCAGA	1500
	TGTCCAAATT GAAGATGGGA AAGGAACAAT CCTAATATCT TCCGAAGAGG GAGAGACGGA	1560
	AGCTAATAAT CACAAGAACT TGTGAGAATT TGAATTAGA AATGGCAGCC GGCTTCAAGC	1620
25	AGATGACTTC CTCCAGGACT ATACTTTATT GATCAACATC CTTCATAGTG AAGACCTAGG	1680
	AAAGGACGTT GAATTTGAAG TTGTTGGTGA TGCCCCGAA AAAGTGGGGS CCAAACAAGC	1740
30	TGAAGATGCT GCCAAAAGCA TAACCAATGG GCAGTGATGA TGGGAGCTTC AGCCCTCCAC	1800
	CTYCACAGCT TCAAGGAGGC AAGATGGACG TTYCYCATAG TTGATYCGGR TGAAGAAGRT	1860
	TCTCCAATAA TTGCCCGACG TTCATTGAAG GAAGGAGGAG GAGGCCCGCC AAGAGGGGAA	1920
35	TTTAGGNTTG	1930

40 (2) INFORMATION FOR SEQ ID NO: 173:

(i) SEQUENCE CHARACTERISTICS:

- 45 (A) LENGTH: 1509 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 173:

50	GGCCCTGGCC TCTGGGCTGA GGCTTGCTAG GGAATCGGGG TGGCTCTAAG GGGCAGGGAT	60
	AGGGCTGGGG AGCGCCGGCC TGTGGCCCTG ACCAGCCCCT TCTCGTGCRG GTTCCACCCC	120
55	GATGCAGGTG GTCACGTGCT TGACGCGGGA CAGCTACCTG ACGCACTGCT TCCTCCAGCA	180
	CCTCATGGTC GTGCTGTCCT CTCTGGAACG CACGCCCTCG CCGGAGCCTG TTGACAAGGA	240
	CTTCTACTCC GAGTTTGGGA ACAAGACCAC AGGGAAGATG GAGAAGTACG AGCTGATCCA	300
60	CTCTAGTCGC GTCAAGTTTA CCTACCCAG TGAGGAGGAG ATTGGGGACC TGACGTTTAC	360

	TGTGGCCCAA AAGATGGCTG AGCCAGAGAA GGGCCAGCC CTCAGCATCC TGCTGTACGT	420
	GCAGGCCTTC CAGGTGGGCA TGCCACCCCC TGGGTGCTGC AGGGGCCCCC TGGCCCCAA	480
5	GAACTCCTG CTCACCAGCT CCGAGATCTT CCTCCTGGAT GAGGACTGTG TCCACTACCC	540
	ACTGCCCGAG TTTGCCAAAG AGCCGCCGCA GAGAGACAGG TACCGGCTGG ACATGGCCG	600
10	CCGCGTCCGG GACCTGGACC GAGTGCTCAT GGGCTACCAG ACCTACCCGC AGCCCTCACC	660
	CTCGTCTTCG ATGACGTGCA AGGTCATGAC CTCATGGGCA GTGTACCCTT GGACCACTTT	720
	GGGAGGTGC CAGGTGGCCC GGCTAGAGCC AGCCAGGGCC GTGAAGTCCA GTGGCAGGTG	780
15	TTTGTCCCA GTGCTGAGAG CAGAGAGAAG CTCATCTCGC TGTGGGCTCG CCAGTGGGAG	840
	GCCCTGTGTG GCCGTGAGCT GCCTGTGAG CTCACCGGCT AGCCAGGGCC ACAGCCAGCC	900
20	TGTGTGTGCC AGCCTGACGC CTACTGGGCG AGGGCAGCAG GCTTTTGTGT TCTCTAAAAA	960
	TGTTTATCC TCCCTTTGGT ACCTTAATTT GACTGTCTTC GCAGAGAATG TGAACATGTG	1020
	TGTGTGTGT GTTAATTCTT TCTCATGTTG GGAGTGAGAA TGCCGGGCCC CTCAGGGCTG	1080
25	TCGGTGTGCT GTCAGCCTCC CACAGGTGGT ACAGCCGTGC ACACCAGTGT CGTGTCTGCT	1140
	GTTGTGGGAC CGTGTTAAC ACGTGACACT GTGGGTCTGA CTTTCTCTTC TACACGTCTT	1200
30	TTCCTGAAGT GTCGAGTCCA GTCCTTTGTT GCTGTGTGCTG TTGCTGTGTC TGTGTCTGTT	1260
	GGCATCTTGC TGCTAATCCT GAGGCTGGTA GCAGAAAGCA CATTGGAAGC TCCCACCCCA	1320
	TATGTTCCTT CAAAGTGGAG GTCTCCCTG ATCCAGACAA GTGGGAGAGC CCGTGGGGGC	1380
35	AGGGGACCTG GAGCTGCCAG CACCAAGCGT GATTCCTGCT GCCTGTATTC TCTATTCCAA	1440
	TAAAGCAGAG TTTGACACCG TCAAAAAAAA AAAAAAAAAA AAAAAAAAAA ATTTCCTGCGG	1500
40	CCTCAAGGG	1509

45 (2) INFORMATION FOR SEQ ID NO: 174:

(i) SEQUENCE CHARACTERISTICS:

- 50 (A) LENGTH: 3173 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 174:

55	TCGACCCAS GCGTCCGTGC TTTCCACAG AAGGTTAGAC CCTGAAAGAG ATGGCTCAGC	60
	ACCACCTATG GATCTTGCTC CTTGCTGTC AAACCTGGCC GGAAGCAGCT GGAAAAGACT	120
60	CAGAAATCTT CACAGTGAAT GGGATTCTGG GAGAGTCAGT CACTTTCCCT GTAAATATCC	180

	AAGAACCACG GCAAGTTAAA ATCATTGCTT GGACTTCTAA AACATCTGTT GCTTATGTAA	240
	CACCAGGAGA CTCAGAAACA GCACCCGTAG TTAGTGAC CCACAGAAAT TATTATGAAC	300
- 5	GGATACATGC CTTAGGTCCG AACTACAATC TGGTCATTAG CGATCTGAGG ATGGAAGACG	360
	CAGGAGACTA CAAAGCAGAC ATAAATACAC AGGCTGATCC CTACACCACC ACCAAGCGCT	420
10	ACAACCTGCA AATCTATCGT CGGCTTGGGA AACCAAAAAT TACACAGAGT TTAATGGCAT	480
	CTGTGAACAG CACCTGTAAT GTCACACTGA CATGCTCTGT AGAGAAAGAA GAAAAGAATG	540
	TGACATACAA TTGGAGTCCC CTGGGAGAAG AGGGTAATGT CCTTCAAATC TTCCAGACTC	600
15	CTGAGGACCA AGAGCTGACT TACACGTGTA CAGCCCAGAA CCTGTGACG AACAAATCTG	660
	ACTCCATCTC TGCCCGGCAG CTCTGTGCAG ACATCGCAAT GGGCTTCCGT ACTCACCACA	720
20	CCGGTTGCT GAGCGTGCTG GCTATGTTCT TTCTGCTGT TCTCATCTG TCTTCAGTGT	780
	TTTGTTCG TTTGTTCAAG AGAAGACAAG ATGCTGCCTC AAAGAAAACC ATATACACAT	840
	ATATCATGGC TTCAAGGAAC ACCCAGCCAG CAGAGTCCAG AATCTATGAT GAAATCCTGC	900
25	AGTCCAAGGT GCTTCCCTCC AAGGAAGAGC CAGTGAACAC AGTTTATTCC GAAGTGCAGT	960
	TTGCTGATAA GATGGGGAAA GCCAGCACAC AGGACAGTAA ACCTCCTGGG ACTTCAAGCT	1020
30	ATGAAATGT GATCTAGGCT GCTGGGCTGA ATTCTCCCTC TGGAACTGA GTTACAACCA	1080
	CCAATACTGG CAGGTTCCCT GGATCCAGAT CTCTCTGCC CAACTCTTAC TGGGAGATTG	1140
	CAAACTGCCA CATCTCAGCC TGTAAGCAAA GCAGGAAACC TTCTGCTGGG CATAGCTTGT	1200
35	GCCTAAATGG ACAAATGGAT GCATACCCTT CCTGAAATGA CTCCCTCTG AATGAATGAC	1260
	AAAGCAGGTT ACCTAGTATA GTTTTCCCAA ACTTCTTCCC ATCATAGCAC ATGTAGAAAA	1320
40	TAATATTTT ATGGCACACT GGGATAAACA AGCAAGATTG CTCACCTCTG GAAGCTGCAT	1380
	ATGACTAGAG GCCTCTTGTG ACTGGAGGTA ACAACCCTGC CCAGTAACTG TGGGAGAAGG	1440
	GGATCAATAT TTGACACACC TGTAATAGGC CATGGCACAC CAGCCAAGAT GCTCTGCTCA	1500
45	CAGTCAGTAT GTGTGAAGAT CCTGGTGC GGGCCTTCAC CACGCATCTT GAGCAAATTA	1560
	GGAAAATGTA CCCTTCGCTT GAGGCAGATG CAGCCCTTCC CCCGAGTGCA TGGCTTGGAG	1620
50	AGCAGAATGT GGGCTGCATA TAAGCACACT CATCCCTTTG TCTGGGAATC TTTGTGCAGG	1680
	GCATAACAGG CTTAGTAAGT CCAAACACAG ATGACAGTGC TGTGTGGGTC TCTGTCAGAG	1740
	TTGTGGCTCT CAGCCATGTA GACACACTCT CCAAATGGAG TGTTGAAAA TGTCTTTCT	1800
55	GCAGGGTCTA GAGACTGCTG GGACACTTTT CTGGAGTGC TACTTCAGAA GCCTTATAGG	1860
	ATTTCTTTT TGGCCAAGAT TTCCTTCTGT ATCACTCCAA GCAGCCTCAG CAGAAGAAGC	1920
60	AGCCATGCCC AGTATTCCCA CTCTCCAAAA GGAAGTACC AGCTTATATT TCTCACACTT	1980

	CTGGGGAAC T GGTATAATC CAACCATCAA AATAGAAGAC CTGCAAGAA GCAGAGTCAT	2040
	TCTCCAGAAG GAACTTGGGA GATGATGGTG CAGATGATGA AACTGGGTTC ATCCCAGTTC	2100
-5	CAAAGACTCA GAGAACTAGA GTTTAAGCTG AGGCAGAGTG CCGCCACCCT GGCATGCCCC	2160
	ACAAACAGAT CACCAGCCAG CTTACACAGG CATTAAC TCT CCTCAATGAG GAAGAATCAT	2220
10	TCACAACTGA GCAAGACATT CATATGATCA TTTAAGGAAG TGTTTCCCTT ATGTGTTAGC	2280
	AAGTATAATC GGCTAACTCC TAAATCCCAA TGAATAGTCC TAGGCTGGAC AGCAATGGGC	2340
	TGCAATTAGG CAGATAAAGA CATCAGTCCC AGTAAATGAA TCCATAGACT CATCTAGCAC	2400
15	CAACTACCAT TAGCACTATG TTAGGAGCTG CAAGGCCCA AAGTAGAAGA TGTGCATAAT	2460
	GTCTGCTCTT GTGTAGCTCA GGAGACAATT CCAGCACAGA CACTACAGTT AACGCTGAAC	2520
20	TGCAGCTGCA AGTAATAGCA TGAACAGTCA GAAAATACC TTATGAGGGG GCAGGGCTGA	2580
	AGCTGGGCCT TGAAGGATGG ATGAAATTTG GATAGAGAAT GAGGAAGACA GAGGGCCTCC	2640
	AAGTGAGAGA AGCATGAAAA ATGAGCAGGG GCCTGGATCA GTGGGGTGTA TTCAGAGCAC	2700
25	CTCTCCAGAT GCACCATGCA TGCTCACAGT CCCTTGCCTA TGTGTGGCAG AGTGTCCCAG	2760
	CCAGATGTGT GCCCCACCC CATGTCCATT TACATGTCCT TCAATGCCCA CCTCAAAAGG	2820
30	TACCTCTTCT GTAAAGCTTT CCCTGGTATC AGGAATCAAA ATTAATCAGG GATCTTTTCA	2880
	CACTGCTGTT TTTTCTCTT TGGTCCCTCT ATCACTAAAA CTCATCTCAT TCAGCCTTAC	2940
	AGCATAACTA ATTATTTGTT TTCTCTACTA CATTGTACAT GTGGGAATTA CAGATAAACG	3000
35	GAAGCCKGCT GGGGTGGTGG CTCACGCCTG TAATCCCAAC ACTTTGGGAG GCCAAGGCAG	3060
	GCGGATCACC TGAGGTCAGG ARTTCGAGAT TARTCTGGCC AACATGGTGA AACCCCATNT	3120
40	NTACTAAAAA TACGAAATTA GCCAGGTGTG GTGGCACACA TCTGTAGTCC CAG	3173

45 (2) INFORMATION FOR SEQ ID NO: 175:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 991 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 175:

55	AAATTCGGCA CAGCTGAGAG GAGACACAAG GAGCAGCCCG CAAGCACCAA GTGAGAGGCA	60
	TGAAGTTACA GTGTGTTTCC CTTTGGCTCC TGGGTACAAT ACTGATATTG TGCTCAGTAG	120
	ACAACCACGG TCTCAGGAGA TGTCTGATTT CCACAGACAT GCACCATATA GAAGAGAGTT	180
60	TCCAAGAAAT CAAAAGAGCC ATCCAAGCTA AGGACACCTT CCCAAATGTC ACTATCCTGT	240

CCACATTGGA GACTCTGCAG ATCATTAAAGC CCTTAGATGT GTGCTGCGTG ACCAAGAACC 300
 TCCTGGCGTT CTACGTGGAC AGGGTGTTC AAGATCATCA GGAGCCAAAC CCCAAAATCT 360
 -5 TGAGAAAAAT CAGCAGCATT GCCAACTCTT TCCTCTACAT GCAGAAAACT CTGCGGCAAT 420
 GTCAGGAACA GAGGCAGTGT CACTGCAGGC AGGAAGCCAC CAATGCCACC AGAGTCATCC 480
 10 ATGACAACATA TGATCAGCTG GAGGTCCACG CTGCTGCCAT TAAATCCCTG GGAGAGCTCG 540
 ACGTCTTTCT AGCCTGGATT AATAAGAATC ATGAAGTAAT GTCCTCAGCT TGATGACAAG 600
 GAACCTGTAT AGTGATCCAG GGATGAACAC CCCCTGTGCG GTTTACTGTG GGAGACAGCC 660
 15 CACCTTGAAG GGAAGGAGA TGGGAAGGC CCCTTGACG TGAAAGTCCC ACTGGCTGGC 720
 CTCAGGCTGT CTTATTCCGC TTGAAAATAG CCAAAAAGTC TACTGTGGTA TTTGTAATAA 780
 20 ACTCTATCTG CTGAAAGGGC CTGCAGGCCA TCCTGGGAGT AAAGGGCTGC CTTCCCATCT 840
 AATTTATGT GAAGTCATAT AGTCCATGTC TGTGATGTA GCCAAGTGAT ATCCTGTAGT 900
 ACACATTGTA CTGAGTGGTT TTTCTGAATA AATTCCATAT TTTACCTAAA AAAAAAAAAA 960
 25 AAAAACTCGA GGGGGGGCCC GTACCCAATT T 991

30

(2) INFORMATION FOR SEQ ID NO: 176:

(i) SEQUENCE CHARACTERISTICS:

35

- (A) LENGTH: 1290 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 176:

40

ACAGCCCTCT TCGGAGCCTG AGCCCGGCTC TCCTCACTCA CCTCAACCCC CAGGCGGCCC 60
 CTCCACAGGG CCCCTCTCCT GCCTGGACGG CTCTGCTGGT CTCCCCGTCC CCTGGAGAAG 120
 45 AACAAAGCCA TGGGTGGCC CCTGCTGCTG CCCCTRCTGC YCCTGCTGCW GCCGCCAGCA 180
 TTTCTGCAGC CTRGTGGCTC CACAGGATCT GGTCCAAGCT ACCTTTATGG GGTCACTCAA 240
 CCAAAACACC TCTCAGCCTC CATGGGTGGC TCTGTGGAAA TCCCCTTCTC CTTCTATTAC 300
 50 CCCTGGGAGT TAGCCAYAGY TCCCRACGTG AGAATATCCT GGAGACGGGG CCACTTCCAC 360
 GGGCAGTCCT TCTACAGCAC AAGGCCGCCT TCCATTCACA AGGATTATGT GAACCGGCTC 420
 55 TTTCTGAACT GGACAGAGGG TCAGGAGAGC GGCTTCTCTA GGATCTCAAA CCTGCGGAAG 480
 GAGGACCACT CTGTGTATTT CTGCCGAGTC GAGCTGGACA CCCGGAGATC AGGGAGGCAG 540
 CAGTTGCAGT CCATCAAGGG GACCAAACTC ACCATCACCC AGGCTGTCAC AACCACCACC 600
 60

ACCTGGAGGC CCAGCAGCAC AACCACCATA GCCGGCCTCA GGGTCACAGA AAGCAAAGGG 660
 CACTCAGAAT CATGGCACCT AAGTCTGGAC ACTGCCATCA GGGTTGCATT GGCTGTGCGT 720
 5 GTGCTCAAAA CTGTCATTTT GGGACTGCTG TGCCTCCTCC TCTGTGGTGG AGGAGAAGGA 780
 AAGGTAGCAG GGCGCCAAGC AGTGACTTCT GACCAACAGA GTGTGGGGAG AAGGGATGTG 840
 10 TATTAGCCCC GGAGGACGTG ATGTGAGACC CGCTTGTGAG TCCTCCACAC TCGTTCCCCA 900
 TTGGCAAGAT ACATGGAGAG CACCCTGAGG ACCTTTAAAA GGCAAAAGCCG CAAGGCAGAA 960
 GGAGGCTGGG TCCCTGAATC ACCGACTGGA GGAGAGTTAC CTACAAGAGC CTTTCATCCAG 1020
 15 GAGCATCCAC ACTGCAATGA TATAGGAATG AGGTCGTAAC TCCACTGAAT TAAACCACTG 1080
 GCATTTGGGG GCTGTTYATT ATAGCAGTGC AAAGAGTTCC TTTATCCTCC CCAAGGATGG 1140
 20 AAAATACAAT TTATTTTGCT TACCATACAC CCCTTTTCTC CTCGTCCACA TTTTCCAATC 1200
 TGTATGGTGG CTGCTTCTA TGGCAGAAGG TTTTGGGGAA TAAATAGCGT GANATGNTNC 1260
 TGACTNAAAA AAAAAAAAAA AAAAATCGA 1290

25

(2) INFORMATION FOR SEQ ID NO: 177:

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- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 2290 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 177:

TGGGGCCCTT TTTGGATGCT CTGGGTGTTT TTGCCAAGAG TTACAGGATG TCAAGTGTGG 60
 40 GGAGCTCAGC ACCCTTGCTG TGGACCAGTG AAGGCTGTTC CAGACCAGGT GCTTCCAGAC 120
 ATTTCCAGGC TCCAGGAGAG AGGCTGGGAG CCCCCACAGA AAGCACAGGA AAATGCAAAA 180
 AAAAAACAGT CTTTTTTTTT TTTTGTCTT TTATTATGAA AACAAAACAA ATGCCCCAGG 240
 45 AGAAGGTCC ATGATTACCA GAAACATCAA AGAGTACTTT CTACCATTTT TATTCTGTG 300
 TGTGAGGCC AGCATTGCAA TAAACAAGCT AAACTACTTA CATTGGACTC ATTTTCAGTA 360
 50 ACTGACATTT ACAGGAATAT ACTAGAAACG GCACTAAAAA GTTTAAGAAA AGTTACGGTA 420
 AACTTGCATG CACATCATAC AGAAAAGTAA CATTTTAAAT ATAAAAAGA AAAACTTCCT 480
 GGAAGCATTA TGCCAGTATT AAGGAACAGT GCTACTCTGG ATGTGACAAA TTCTGTATGT 540
 55 GGGTGTACT CTTTCCCAA AGACTGTCAG AGGCGTGAGT GCTGCAAAAG AACAACAACA 600
 AAAACAAACA CACAAAAAAA TGTGTCTTAC AGTTTGTAAG CAAGATGACA CTGCCCAACA 660
 60 CAAAGAGGGG TCTGGAGTTC AGTTCACGCC CGAAGCCTGC CCCCTCGGCC TCCAGGGGTC 720

	ATTTCAGAGTG TTCTCAAATC CAATTCCGAC ACACGACTTG TCACTACTCC TCTCCCTTG	780
	AAAAAAGCAT GTTAGAAGCT GCCCTACAGG TCTCAGCAGT GGGACAATCT AATTGAATCA	840
- 5	CCGCAGCCTT CTAATACAGA AGAAACGGAC GTGACTGTCA CCCTCAGCCC GCCAGCAAGG	900
	GCGCTGAGGA AGTCATTAAT CCTTCGAAAC TCTGAAAAGA AACCAGTGTT GAAGTCTGGA	960
10	CAGAAAGCCT TAAAAAAGTG ACAGCACCAA TGCAGCTGCT CAGTGTACCC NCCGTGGGCT	1020
	GTCAGGGTCA GTGGCTTCTT TCTAGATGAA AGGAGCAGAG GCGAGCCGAC GCCACCGTCA	1080
	CAGAGAACCA GCCGAGAAGG AAAGGCCCCA CGATGCTCCC TGTGCGCTGC CCCACAGCC	1140
15	GGCCGCTCCC CCGACGGCTC ACACAGGCAG CACCTCACTG CCCTGTGGCT GGAGGGGCAT	1200
	TGCAAGGAGC GGGCCCCAGC CCCAGGCACC CCCGCTTAG GTGTACGTA TCACCCAGCC	1260
20	CTGTGCTGGC AGCAGGTTAC CAACCAGCCT GCGTGAAGAC CTGTCAACTG TCGTGTGTGA	1320
	ATTCTTAAA TTCGGTTTAA ATAGTCCATT AAAGATCTGT TTAGAAAATA CCTTTGAAAA	1380
	CGAGGGTAAC TTTAAAAAAT GGAACTTTTC AAATCCATTT ATATTTTAT TATAAACAAA	1440
25	ACTTAATTAA AAGTTTACA AACTGGCTGA AAATCACCA AGTGTGAGAC TCACCAGCAA	1500
	TTTAAAAAAT GATAATTTAC CAGCATCTCC TCATCAGAGT TCCCTCTCCA GTAAGGGTAT	1560
30	ACCTACATCT GTAAGGGTCA GTGGACTCTG AATCAATTTT ATGGTTGTTT TAAAATCACC	1620
	GTGTATTAGG ATACTAATGA TAGTCCCTAT ATCCATCCAG AAATGCTGGC AGAAAGCACT	1680
	GGCCACCATA CAGGACAGAC CACACCACAG CTCCATACCC AGCGTCTGCC TGGAGGCTCC	1740
35	CCCACGCTGA GGTCCGGGAG AATGCCTGGT TTCAGTCATT TCCGACTAA CTGTGACAAC	1800
	GCGTGAGCAG GGAGCACCGT GCGAGTCTCC GGGAGGGAAT CCTCCTGGG CCCAGAGACT	1860
40	CCTCCACCCC TGGGGAGGGC AGACAGGCTC GGGARGGCCT GGCCAGGCCA CTGGAGGCTG	1920
	GCAGGAGCA GGCATGTCCA CCCGCAAGCC TGGGAGGCTA ACTCTGGCAT TCCTGGCCGG	1980
	AGCCGCCATG CTCATTTGGT GGCCAGTTTG GGACATCCCC GTACTCAAAG ACCATATGGC	2040
45	AGCCTCTGGG AAAACAAAAC CAAAACATCA CCTTCTATTA AACTCTGTAT ATTATTATTT	2100
	TTTACAATAG AAAGTTAAAA ATCAAGACTT AGATTTACTA TACATTTTTT CTCTCAGATT	2160
50	ACAAAGTTTA TATTATATAA CTGGGGTTCC CTAAATTGAT TTCTTTTAAA ACAGTCTTAA	2220
	AGAGACCAGA AGTGAATACA AAAGAACTAA ACAAATAAAA AAATTAGAAT GTGCTGTAGC	2280
55	TGAAAGCTGT	2290

60 (2) INFORMATION FOR SEQ ID NO: 178:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 549 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

-5

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 178:

10 GGCACGAGCC ATGCCTGGCC TCTCCTTGAT TCTTACAGTC ACTTTGTTGG CTGTTTCTGA 60
 CTCAGCAGCT ACCTGCATTG TGGCCAAAGG ATGACCTATT CCTTCTCAGG AGGGCAAAAA 120
 TGTGGAATAG TGTCTGTCCA TGCCTCTCCT CATGGGCTAC CACCTCTGCC ACCGTGGTTA 180
 15 ATCAGTAACA ACCAGGAGAG AAGCTGCTGG AACTGACCTC TGGGAACTCC CTGGGATGGT 240
 TTGGTGCAGG AATGTAGTAG GCATACACGT GGTTCGCTGG ATCTGGGCCC TCCTGATGTG 300
 AGTAGAGAGG TAAAAGGCCA CCATCTCCTT GACCTCTGGG GAACTCATCC ACAAAGAAGA 360
 20 TGTTCCTCAAG ATGCTTCTGA AGATTGCCTA AAAATAGCCG GTTTCACCCC CCGTGAATGC 420
 ATCCATTCTA GAATGCTCCT TCACCAGGAC CAGAGAACTG ATTTACAGAA GTGACATGAA 480
 25 AACATTCCAT CCCAGAATTT GCAGTAGCTC AAATTAAGTT TCTAGCTATT AAAAAGAAAA 540
 AAAAAAAA 549

30

(2) INFORMATION FOR SEQ ID NO: 179:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1509 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 179:

40 GGCACGAGGG CTCATTCAAT CCGCGCGGG CCTGCCAGAC ACCTGCGCCC TTCTGCAGCC 60
 GCGCGCCGCA TCCGCGCCG CAGCCCCAG CATGTCGGC CCAGACGTCG AGACGCCGTC 120
 45 CGCCATCCAG ATCTGCCGA TCATGCGGCC AGATGATGCC AACGTGGCCG GCAATGTCCA 180
 CGGGGGGACC ATCCTGAAGA TGATCGAGGA GGCAGGCGCC ATCATCAGCA CCCGGCATTG 240
 50 CAACAGCCAG AACGGGGAGC GCTGTGTGGC CGCCCTGGCT CGTGTGAGC GCACCGACTT 300
 CCTGTCTCCC ATGTGCATCG GTGAGGTGGC GCATGTCAGC GCGGAGATCA CCTACACCTC 360
 CAAGCACTCT GTGGAGGTGC AGGTCAACGT GATGTCCGAA AACATCCTCA CAGGTGCCAA 420
 55 AAAGCTGACC AATAAGGCCA CCCTGTGGTA TGTGCCCTG TCGCTGAAGA ATGTGGACAA 480
 GGTCTCGAG GTGCCTCCTG TTGTGTATTC CCGGCANGAG CAGGAGGAGG AGGGCCGGAA 540
 60 GCGGTATGAA GCCCAGAAGC TGGAGCGCAT GGAGACCAAG TGGAGGAACG GGGACATCGT 600

	CCAGCCAGTC CTCAACCCAG AGCCGAACAC TGTCAGCTAC AGCCAGTCCA GCTTGATCCA	660
	CCTGGTGGGG CCTTCAGACT GCACCCCTGCA CGGCTTTGTG CACGGAGGTG TGACCATGAA	720
-5	GCTCATGGAT GAGGTCGCGG GGATCGTGGC TGCACGCCAC TGCAAGACCA ACATCGTCAC	780
	AGCTTCCGTG GACGCCATTA ATTTTCATGA CAAGATCAGA AAAGGCTGCG TCATCACCAT	840
10	CTCGGGACGC ATGACCTTCA CGAGCAATAA GTCCATGGAG ATCGAGGTGT TGGTGGACGC	900
	CGACCCCTGTT GTGGACAGCT CTCAGAAGCG CTACCGGGCC GCCAGTGCCT TCTTCACCTA	960
15	CGTGTGCTG AGCCAGGAAG GCAGGTCGCT GCCTGTGCCC CAGCTGGTGC CCGAGACCGA	1020
	GGACGAGAAG AAGCGCTTTG AGGAAGGCAA AGGGCGGTAC CTGCAGATGA AGGCGAAGCR	1080
	ACAGGGCCAC GCGGASCYTC AGCCCTAGAC TCCCTCCTCC TGCCACTGGT GCCTCGAGTA	1140
20	GCCATGGCAA CGGGCCAGT GTCCAGTCAC TTAGAAGTTC CCCCCTTGGC CAAAAACCCA	1200
	ATTACATMG AGAGCTGGTG TTGTCTGAAG TTTTCGTATC ACAGTGTAA CCTGTACTCT	1260
25	CTCCTGCAAA CCTACACACC AAAGCTTTAT TTATATCATT CCAGTATCAA TGCTACACAG	1320
	TGTTGTCCCG AGCGCCGGA GCGTTGGGC AGAAACCTC GGAATGCTT CCGAGCACGC	1380
	TGTAGGTAT GGAAGAACC CAGCACCCT AATAAGCTG CTGCTTGGCT GGAAAAAAA	1440
30	AAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA	1500
	AGAAAAAAN	1509

35

(2) INFORMATION FOR SEQ ID NO: 180:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1316 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 180:

	AGCTGTATCA TAGGAAAGAT GGCCACACCG GCGGTACCAG TAAGTGCTCC TCCGGCCACG	60
	CCAACCCAG TCCCGGCGGC GGCCCGAGCC TCAGTTCCAG CGCCAACGCC AGCACCAGCT	120
50	GCGGCTCCGG TTCCCGCTGC GGCTCCAGCC TGCATCCTCA GACCCGCGG CAGCAGCGC	180
	TGCAACTGCG GCTCCTGGCC AGACCCCGGC CTCAGCGCAA NTCCAGCGCA GACCCAGCG	240
55	CCCGCTCTGC CTGGTCCTGC TCTTCAGGG CCCTTCCCCG GCGGCCGCGT GGTGAGCTG	300
	CACCCAGTCA TTTTGGCCTC CATGTGGAC AGCTACGAGA GACGCAACGA GGTGCTGCC	360
60	CGAGTTATCG GGACCCTGTT GGAAGTGTG GACAAACACT CAGTGGAGGT CACCAATTGC	420

	TTTTCAGTGC CGCACAATGA GTCAGAAGAT GAAGTGGCTG TTGACATGGA ATTTGCTAAG	480
	AATATGTATG AACTGCATAA AAAAGTTTCT CCAAATGAGC TCATCCTGGG CTGGTACGCT	540
5	ACGGGCCATG ACATCACAGA GCACTCTGTG CTGNATCCAT GAGTACTACA GCCGAGAGGC	600
	CCCCAACCCC ATCCACCTCA CTGTGGACAC AAGTCTCCAG AACGGCCGCA TGAGCATCAA	660
10	AGCCTACGTC AGCACTTTAA TGGGAGTCCC TGGGAGGACC ATGGGAGTGA TGTTCACGCC	720
	TCTGACAGTG AAATACGCGT ACTACGACAC TGAACGCATC GGAGTTGACC TGATCATGAA	780
	GACCTGCTTT AGCCCCAACA GAGTGATTGG ACTCTCAAGT GACTTGACGC AAGTAGGAGG	840
15	GGCATCAGCT CGCATCCAGG ATGCCCTGAG TACAGTGTG CAATATGCAG AGGATGTACT	900
	GTCTGGAAG GTGTCAGCTG ACAATACTGT GGGCCGCTTC CTGATGAGCC TGGTTAACCA	960
20	AGTACCGAAA ATAGTTCCCG ATGACTTTGA GACCATGCTC AACAGCAACA TCAATGACCT	1020
	TTTGATGGTG ACCTACCTGG CCAACCTCAC ACAGTCACAG ATTGCACTCA ATGAAAACT	1080
	TGTAAACCTG TGAATGGACC CCAAGCAGTA CACTTGCTGG TCTAGGTATT AACCCCAGGA	1140
25	CTCAGAAGTG AAGGAGAAAT GGGTTTTTTG TGGTCTTGAG TCACACTGAG ATAGTCAGTT	1200
	GTGTGTGACT CTAATAAACG GAGCCTACCT TTTGTAAATT AAAAAAAAAA AAAAAAACCN	1260
30	SGRGGGGGG CCCGGTCCCA TTSSCCCTTT NGTAATTCGT NITACAATCC CCNGGC	1316

35 (2) INFORMATION FOR SEQ ID NO: 181:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 777 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 181:

45	GGCATGWKCA GACATGACTT CTATTGCCAG GCTGGTCAAG TGCCAGGGTC ATGAGGGAGA	60
	CATCGATAAG GGTGCTCCTT ATGCTCCCTG CTCTGGAATC CACCAGCGGG CTATCTGCGT	120
	TTATGGGGCT GGGGACTAGA ATTGGATGCT TCAAAACCAT CACCTGTTGG CCAACAAGTT	180
50	TGACCCAAAG GTAGATGATA ATGCTCTTCA GTGCTTAGAA GAATACCTAC GTTATAAGGG	240
	CCATTCTATT GGGACCTGAA CTTTGAAGAC CACAMTATTG AAGAGGCGTT GCTTACCYGT	300
55	TGGGGGCCAA GAGGCATGTT ACCAAACATG GYYCARGAAM YTTGGYKGGG AMCARKKKKG	360
	GKKGGGARRM CMRGGGYTTG SCAAWTCSK KGGCMWCCYT TTAGGGTAAR RRGCGCKGTW	420
	ATTAGATTGT GGGTAAAGTA GGATCTTTTG CCCTTGCAAA TTTGCTGCCT GGGTGAATGY	480
60	TGCTTGTTCC TTCTCMACCC CTAACCCTAG TAGTTCTCTC ACTAACTTTC TCACTAAGTG	540

AGAATGAGAA CTGCTGTGAT AGGGAGAGTG AAGGAGGGAT ATGTGGTAGA GCACTTGATT 600
TCAGTTGAAT GCCTGCTGGT AGCTTTTCCA TTCTGTGGAG CTGCCGTTCC TAATAATTCC 660
AGGTTTGGTA GCGTGGAGGA GAACTTTGAT GGAAAGAGAA CCTTCCCTTC TGTACTGTTA 720
ACTTAAAAAT AAATAGCTCC TGATTCAAAG TAAAAA AAAA AAAAAA 777

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(2) INFORMATION FOR SEQ ID NO: 182:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 791 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 182:

GGCACAGATA ACTATGTACA TGTATTCCTT AAATGTTTTT TTAAGTTTTA TATTCTTGGC 60
ACTGGTCTTC AAATGTGTAC ATGTGTGCCA GGGAGCAAAT GCCTTCTTGT TTCTGAAATT 120
GGTCTTTTAG ACTGTTCTTT TTTCCTCTCT TCTCACCTCC TGCCCCCTCCT TCAGGGTACT 180
TCCGTGGCCA GAACCCCTCC AGGTCAGAGG CAGAAGAGAA GCCTCATGGG TCACAGCAGC 240
AGATGTGGGC TGGAGATCTA TTCATTGGT TTGGCTTGA ATTTTCTGRA TGGTTTACTT 300
GATCYTGGGA AAGANATATC TTGCCAGGAA AAATGATAGN CCTTGACAAT GTTGAATGAT 360
CCTGCACCAC CTTGAAAGAC ATTTCTAATA TGGTTTGTCA GGCAAAGTGG TTAGTAGTCA 420
TTTGTGGCCT GAGGTAGAAG TCCTCAGAAA TCAGCAGACT TCACTGATAA AATGCTGACT 480
TGCCCCCTGA CTGGGCTCTG TGAGAGTGGC CTTCTGCACT GTGCACAGTA GGTGTGAACA 540
CACCACACCT ACAGGGACCA CGTGGTGGGC TGTGGACTAG CGGCCAAGCT CCCTGCAGGC 600
CCACTAATAG AATTCAGCTT TTAGCATGGG CTGTTTCATA CTGTTCTGAT GAAACTGATT 660
TGGTTTCTTT CCTCCATACC CCTCTGCAT TTCAGTGT TTGTTTAGTT TTCCTGGTTT 720
TTAATTATAA CTACAAAATA AAATCTTTAG GCTATTCACC TTAGCTTAGT AAAAAAAAAA 780
AAAAAAACT C 791

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(2) INFORMATION FOR SEQ ID NO: 183:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1405 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 183:

5	AAATGATTA ACAGCTTGAA AGAAGGCTCT GGTMTTGAAG GCCTAGATAG CAGCACTGCC	60
	AGTAGCATGG AGCTGGAAGA ACTTCGGCAT GAGAAAGAGA TGCAGAGGGA GGAAATACAG	120
	AAGCTGATGG GCCAGATACA TCAGCTCAGA TCCGAATTAC AGGATATGGA GGCACAGCAA	180
10	GTTAATGAAG CAGAATCAGC AAGAGAACAG TTACAGGWTG TGCATGACCA AATAGCTGGG	240
	CAGAAAGCAT CCAAACAAGA ACTAGAGACA GAACTGGAGC GACTGAAGCA GGAGTTCCAC	300
15	TATATAGAAG AAGATCTTTA TCGAACAAAG AACACATTGC AAAGCAGAAT TAAAGATCGA	360
	GACGAAGAAA TTCAAAAAC T CAGGAATCAG CTTACCAATA AAACCTTTAAG CAATAGCAGT	420
	CAGTCTGAGT TAGAAAATCG ACTCCATCAG CTAACAGAGA CTCTCATCCA GAAACAGACC	480
20	ATGCTGGAGA GTCTCAGCAC AGAAAAGAAC TCCCTGGTCT TTCAACTGGA GCGCCTCGAA	540
	CAGCAGATGA ACTCCGCCTC TGGGAAGTAGT AGTAATGGGT CTTGATTAA TATGTCTGGA	600
25	ATTGACAATG GTGAAGGCAC TCGTCTGCCA AATGTTCTTG TTTCTTTTAA TGACACAGAA	660
	ACTAATCTGG CAGGAATGTA CGGAAAAGTT CGCAAAGCTG CTAGTTCAAT TGATCAGTTT	720
	AGTATTCGCC TGGGAATTTT TCTCCGAAGA TACCCCATAG CGCGAGTTTT TGTAAATTATA	780
30	TATATGGCTT TGCTTCACCT CTGGGTCATG ATTGTTCTGT TGACTTACAC ACCAGAAATG	840
	CACCACGACC AACCATATGG CAAATGAACC AAGCCCAGTT GTTGCAGTGA TTGGTTGTCT	900
35	TTTTCTAGAC TTGGGATCTG CAAGAAGGCC AATTGCCTAA AATTTCTGAG AACAGTGCAC	960
	AAGATTATTT TATCACTACA AGCTTTTAAC TTTTAAAGTT ATTGTACAAG TATCTACCT	1020
	AAATCTTCCA ATTTCTTTA AATGGTAAGA GTTCTAATA CAGACAATAA TTTAACAAGC	1080
40	TCAGCTCTGC TTTATCTGAG TTTAGTGGTC CTAATATATA TGTAGAGAAA GATGGTGGGG	1140
	TTGTTACCT CTGTACAGAC CATCTGTATG TTAGGTGACA TTGATTATGG GTTATAATCA	1200
45	GGGAAACTAA TTGTATTTAG TGACAAAAAT AAAAAGTTTT TTTTTATAA TTCAGTCTGC	1260
	TTTTGGATTT TCATATATTT AACTTTGCAA AAAGATTTAC TTTGTACATG TTACAGGCTT	1320
	GATTGGTGTA AATCTTTTTA TAAATACATA AATAAAGNA AAATATGCAT TTTTCTTTTC	1380
50	TAAAAAATAA AAAAAAATAA CTCGA	1405

55 (2) INFORMATION FOR SEQ ID NO: 184:

(i) SEQUENCE CHARACTERISTICS:

- | | |
|----|-----------------------------|
| | (A) LENGTH: 1596 base pairs |
| 60 | (B) TYPE: nucleic acid |
| | (C) STRANDEDNESS: double |

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 184:

5	GTCATGCAGT GCGCCGAGA ACTGTGCTCT TTGAGGCCGA CGCTAGGGGC CCGGAAGGGA	60
	AACTGCGAGG CGAAGGTGAC CGGGGACCGA GCATTTCAGA TCTGCTCGGT AGACCTGGTG	120
10	CACCACCACC ATGTTGGCTG CAAGGCTGGT GTGTCTCCGG AACTACCTT CTAGGGTTTT	180
	CCACCCAGCT TTCACCAAGG CCTCCCCTGT TGTGAAGAAT TCCATCACGA AGAATCAATG	240
	GCTGTTAACA CCTAGCAGGG AATATGCCAC CAAAACAAGA ATTGGGATCC GCGTGGGAG	300
15	AACTGGCCAA GAACTCAAAG AGGCAGCATT GGAACCATCG ATGGAAAAA TATTTAAAT	360
	TGATCAGATG GGAAGATGGT TTGTGCTGG AGGGGCTGCT GTTGGTCTTG GAGCATTGTG	420
20	CTACTATGGC TTGGGACTGT CTAATGAGAT TGGAGCTATT GAAAAGGCTG TAATTTGGCC	480
	TCAGTATGTC AAGGATAGAA TTCATTCCAC CTATATGTAC TTAGCAGGGA GTATTGGTTT	540
	AACAGCTTTG TCTGCCATAG CAATCAGCAG AACGCCTGTT CTCATGAACT TCATGATGAG	600
25	AGGCTCTTGG GTGACAATTG GTGTGACCTT TGCAGCCATG GTTGGAGCTG GAATGCTGGT	660
	ACGATCAATA CCATATGACC AGAGCCAGG CCCAAAGCAT CTTGCTTGGT TGCTACATTC	720
30	TGGTGTGATG GGTGCAGTGG TGGCTCCTCT GACAATATTA GGGGTCCCTC TTCTCATCAG	780
	AGCTGCATGG TACACAGCTG GCATTGTGGG AGGCCTCTCC ACTGTGGCCA TGTGTGCGCC	840
	CAGTGAAAAG TTTCTGAACA TGGGTGCACC CCTGGGAGTG GGCTGGGTC TCGTCTTTGT	900
35	GTCTTCATTG GGATCTATGT TTCTTCCACC TACCACCGTG GCTGGTGCCA CTCTTTACTC	960
	AGTGGCAATG TACGGTGGAT TAGTTCTTTT CAGCATGTTT CTTCTGTATG ATACCCAGAA	1020
40	AGTAATCAAG CGTGCAGAAG TATCACCAAT GTATGGAGTT CAAAAATATG ATCCCATTAA	1080
	CTCGATGCTG AGTATCTACA TGGATACATT AAATATATTT ATGCGAGTTG CAACTATGCT	1140
	GGCAACTGGA GGCAACAGAA AGAAATGAAG TGAATCAGCT TCTGGCTTCT CTGCTACATC	1200
45	AAATATCTTG TTTAATGGGG CAGATATGCA TTAAATAGTT TGTACAAGCA GCTTTCGTTG	1260
	AAGTTTAGAA GATAAGAAAC ATGTCATCAT ATTTAAATGT TCCGGTAATG TGATGCCTCA	1320
50	GGTCTGCCTT TTTTCTGGA GAATAAATGC AGTAATCCTC TCCCAAATAA GCACACACAT	1380
	TTTCAATTCT CATGTTTGGT TGATTTTAAA ATGTTTGGT GAATGTGAAA ACTAAAGTTT	1440
	GTGTCATGAG AATGTAAGTC TTTTCTTCTAC TTTAAATTT AGTAGGTTCA CTGAGTAACT	1500
55	AAAATTTAGC AAACCTGTGT TTGCATATTT TTTKGGAGTG CAGMTAWTG TAATTARAGC	1560
	ATTCCAGTAA NAGTGTNTTT AAAGTTGNTC TATATN	1596

(2) INFORMATION FOR SEQ ID NO: 185:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 2293 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 185:

10 GCGCAGAGCC CGYACGAGCA GGACGACGAC GACAAGGGCG ACTCCAAGGA AACCGGCTG 60
ACCCTGATGG AGGAAGTGCT CCTGCTGGGC CTCAAGGACC GCGARGGTTA CACATCATTT 120
15 TGGAATGACT GTATATCATC TGGATTACGT GGCTGTATGT TAATTGAATT AGCATTGAGA 180
GGAAGGTTAC AACTAGAGGC TTGTGGAATG AGACGTAAAA GTCTATTAAC AAGAAAGGTA 240
20 ATCTGTAAGT CAGATGCTCC AACAGGGGAT GTTCTTCTTG ATGAAGCTCT GAAGCATGTT 300
AAGGAAATC AGCCTCCAGA AACGGTCCAG AACTGGATTG AATTACTTAG TGGTGAGACA 360
TGGAATCCAT TAAAATGCA TTATCAGTTA AGAAATGTAC GGAACGATT AGCTAAAAAC 420
25 CTGGTGAAAA AGGGTGTATT GACAACAGAG AAACAGAACT TCCTACTTTT TGACATGACA 480
ACACATCCCC TCACCAATAA CAACATTAAG CAGCGCCTCA TCAAGAAAGT ACAGGAAGCC 540
30 GTTCTTGACA AATGGGTGAA TGACCCCTCAC CGCATGGACA GGCGCTTGCT GGCCCTCATT 600
TACCTGGCTC ATGCCTCGGA CGTCTGGAG AATGCTTTTG CTCTCTTCT GGACGAGCAG 660
TATGATTTGG CTACCAAGAG AGTGCGGCAG CTTCTCGACT TAGACCCCTGA AGTGGAATGT 720
35 CTGAAGGCCA ACACCAATGA GGTCTGTGG GCGGTGGTGG CGGCGTTCAC CAAGTAACTC 780
TGCTCGGGT GAACCATCT CTTTCTCTC AAGTAAACCA GTAGTTTTTC TTCGTGTGAC 840
40 TTCTGGTTTT CTGTAATTTG TACTTTCCCA CACTATAATT GGCTTCTGTT TTACAAAATG 900
GTGGGTGGCT TTTTCTTTTT TGTACGTGTA CAGGATCTG CTGGTACGAG AGGCCTTCCT 960
CTTCTGTTTT TTAaaaaaag TTTTACTGCC ATATTTGGCAT TCCATTCCCT GTTGCCATCC 1020
45 TCACTGTTAC CTGTTTGGG TTTCTGGTCT ACTTTGACTT TCAAAGTACC TCCAGCCTCC 1080
TCATACGCAC AGCTTTTGGG TGACCTCAGC TTGAGTTTCT CCATATGTGC ATGTACATCT 1140
50 AGCATTTCTG CTACAGTTCA GACAGAAGTC AAAAAAGGC CTTCAACTCA CCAAAGGTAA 1200
ATATCTGTAT CTATTAGGAC ATTTTPTACA TAGACTTCAG TTGAGATGTA TACTTAGCAA 1260
AATTATTTTT AAATTGAAAC AGCACAGTAA ATACTTAATA TAAATGTCC CTTGGATTTT 1320
55 GCTTCCCATG TAAATCTATT GTATTATTAC ACTTGTATA ATTTTAACTA TAAAGGTCCA 1380
ATTGTTTCAC AGAGCCAGTT TGGGATGGGC TGCATTCCAT TTATGCTGTA TATAGTTTGA 1440
60 ATTATATATA AATTACCCCT TCTTCTGGCC ACCCCTGCTC CCATCTTAGT ATTTTGCAAG 1500

5 ATCTAATCAG TTGTACACCT GGTGCCCTC GCTTGCTTCA ATCATGGTTA TTTGATGGCA 1560
 AAATCGACCT CTTGTCGCTG AAGGAGAGAG AAAAGATGTG TGTCTGATTG GTCCTGGGAT 1620
 TTTTGTAGCT GTGCCATTTA TGGTACTCTT TGCCTATGCA TCCCCTTTTT AGATTTTTTTT 1680
 TAAATTTTAT CTTACTGTTT TTATAATTTT TATTGGGAAG AGGCTTGTA CCAGTACCAA 1740
 10 TCTTGAGTTT CTTTTTCTGT CCACAAGTAA ATTAATATCT GCTCTGAAAT GTCATTTATC 1800
 TACTCACACA TTCTTGGGA AAAAATCAA ATGTCAGTCC TAGCAGATGT TGCATGTAAA 1860
 TTGGTAGCAA GTAATGATTA CAACCCAGAG GATTAAGAAT TTTGTAACAG AAAGCTCTAT 1920
 15 GTTTTAATTT TTTATATACA ATTAGGATAA TTAGCATTGT CAGACTATAA ACCTTTGCTT 1980
 TTTAAAGTTT ATTTTACTA TTTCTTTATC ACTTTATTGT ATCATCACCA TTGGTTTCAT 2040
 20 AATGTAAATA CTATATGTTG AACAAATTAA ATGTCAAAT TTTTATTAC CATAGTCCAT 2100
 GTTAATAGTG GGGCTTTCAG GTGTTTAGAG ATTTTTTTTG TTGTTGTTAA CATTCATTGC 2160
 AAAAGTACTA GATGGTGTAT AACTCTAGAG TTGAATTTTA AGGGATTCCC TAATATGTAT 2220
 25 ACTATCTTTT TATCTGAAGT AATAAATAA CAATGATCTT GAAAGTGCCY RAAAMAAAAA 2280
 AAAAAAAAA AAA 2293

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(2) INFORMATION FOR SEQ ID NO: 186:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1212 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 186:

GGCACGAGGC GAGCCGGCGC ACCGTACGCT GGGACGTGTG GTTTCAGCTC GTGCGCCTCC 60
 45 CCGTGGGTTT GCGACGTTTA GCGACTATTG CGCCTGCGCC ACGCCGGCTG CGAGACTGGG 120
 GCCGTGGCTG CTGGTCCCGG GTGATGCTAG GCGGCTCCCT GGGCTCCAGG CTGTTGCGGG 180
 GTGTAGGTGG GAGTCACGGA CGGTTCGGGG CCGAGGTGT CCGCGAAGGT GGCGCACATG 240
 50 GCGGCGAGGG GAGAGCATGG CTCAGCGGAT GGTCTGGGTG GACCTGGAGA TGACAGGATT 300
 GGACATTGAG AAGGACCAGA TTATTGAGAT GGCCTGTC TGATACTGACT CTGATCTCAA 360
 55 CATTTTGGCT GAAGGTCCTA ACCTGATTAT AAAACAACCA GATGAGTTCC TGGACAGCAT 420
 GTCAGATTGG TGTAAGGAGC ATCACGGGAA GTCTGGCCTT ACCAAGGCAG TGAAGGAGAG 480
 60 TACAATTACA TTGCAGCAGG CAGAGTATGA ATTTCTGTCC TTTGTACGAC AGCAGACTCC 540

	TCCAGGGCTC TGTCCACTTG CAGGAAATTC AGTTCATGAA GATAAGAAGT TTCTTGACAA	600
	ATACATGCCC CAGTTCATGA AACATCTTCA TTATAGAATA ATTGATGTGA GCACTGTATA	660
5	AGAACTGTGC AGACGCTGGT ATCCAGAAGA ATATGAATTT GCACCAAAGA AGGCTGCTTC	720
	TCATAGGGCA CTTGATGACA TTAGTGAAAG CATCAAAGAG CTTCAGTTTT ACCGAAATAA	780
10	CATCTTCAAG AAAAAAATAG ATGAAAAGAA GAGGAAAATT ATAGAAAATG GGGAAAATGA	840
	GAAGACCGTG AGTTGATGCC AGTTATCATG CTGCCACTAC ATCGTTATCT GGAGGCAACT	900
	TCTGGTGGTT TTTTTCCTC ACGCTGATGG CTGGCAGAG CACCTTCGGT TAACTTGCAT	960
15	CTCCAGATTG ATTACTCAAG CAGACAGCAC ACGAAATACT ATTTTCTCTC TAATATGCTG	1020
	TTTCCATTAT GACACAGCAG CTCCTTTGTA AGTACCAGGT CATGTCCATC CCTTGGTACA	1080
20	TATATGCATT TGCTTTTAAA CCATTTCTTT TGTTTAAATA AATAAATAAG TAAATAAAGC	1140
	TAGTTCTATT GAAATGCAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA	1200
	AAAAAAAAA AN	1212

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(2) INFORMATION FOR SEQ ID NO: 187:

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- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1605 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 187:

	GCTTCCGAA GTTGCTTTTG TCCAAACATC CGGGCTTCTC CTTTTGTGT TCCGGCCGAT	60
40	CCCACCTCTC CTCGACCCTG GACGTCTACC TTCCGGAGGC CCACATCTTG CCCACTCCGC	120
	GCGCGGGGCT AGCGCGGGTT TCAGCGACGG GAGCCCTCAA GGGACATGGC AACTACAGCG	180
45	GCGCCGGCGG GCGGCGCCCG AAATGGAGCT GGCCCGAAT GGGGAGGGTT CGAAGAAAAC	240
	ATCCAGGCGG GAGGCTCAGC TGTGATGAC ATGGAGAACA TGGATGATAC CTCAGGCTCT	300
	AGCTTCGAGG ATATGGGTGA GCTGCATCAG CGCCTGCGCG AGGAAGAAGT AGACGCTGAT	360
50	GCAGCTGATG CAGCTGCTGC TGAAGAGGAG GATGGAGAGT TCCTGGGCAT GAAGGGCTTT	420
	AAGGGACAGC TGAGCCGGCA GGTGGCAGAT CAGATGTGGC AGGCTGGGAA AAGACAAGCC	480
55	TCCAGGGCCT TCAGCTTGTA CGCCAACATC GACATCCTCA GACCCTACTT TGATGTGGAG	540
	CCTGCTCAGG TGCGAACAGG GCTCCTGGAG TCCATGATCC CTATCAAGAT GGTCAACTTC	600
	CCCCAGAAAA TTGCAGGTGA ACTCTATGGA CCTCTCATGC TGGTCTTCAC TCTGGTGGCT	660
60	ATCCTACTCC ATGGGATGAA GACGTCTGAC ACTATTATCC GGGAGGACAC CCTGATGGGC	720

	ACAGCCATTG GCACCTGCTT CGGCTACTGG CTGGGAGTCT CATCCTTCAT TTACTTCCTT	780
5	GCCTACCTGT GCAACGCCCC GATCACCATG CTGCAGATGT TGGCACTGCT GGGCTATGGC	840
	CTCTTTGGGC ATTGCATTGT CCTGTTTCATC ACCTATAATA TCCACCTCCA CGCCCTCTTC	900
	TACCTCTTCT GGCTGTGGT GGGTGGACTG TCCACACTGC GCATGGTAGC AGTGTGGTG	960
10	TCTCGGACCG TGGGCCCCAC ACAGCGGCTG CTCCTCTGTG GCACCCTGGC TGCCCTACAC	1020
	ATGCTCTTCC TGCTCTATCT GCATTTTGCC TACCACAAAG TGGTAGAGGG GATCCTGGAC	1080
15	AACTTGAGG GCCCCAACAT CCCGCCATC CAGAGGGTCC CCAGAGACAT CCCTGCCATG	1140
	CTCCCTGCTG CTCGGCTTCC CACCACCGTC CTCAACGCCA CAGCCAAAGC TGTTCGGTG	1200
	ACCTGTCAGT CACTGACC CCACCTGAAA TTCTTGGCCA GTCTCTTTC CCGCAGCTGC	1260
20	AGAGAGGAGG AAGACTATTA AAGGACAGTC CTGATGACAT GTTCGTAGA TGGGTTTGC	1320
	AGCTGCCACT GAGCTGTAGC TGCCTAAGTA CCTCCTTGAT GCTGTCCGC ACTTCTGAAA	1380
25	GGCACAAGGC CAAGAACTCC TGGCCAGGAC TGCAAGGCTC TGCAGCCAAT GCAGAAAATG	1440
	GGTCAGCTCC TTTGAGAAC CCTCCCCACC TACCCCTTCC TTCTCTTTA TCTCTCCAC	1500
	ATTGTCTTGC TAAATATAGA CTTGTAATT AAAATGTTGA TTGAAGTCTG GAAAAAAAAA	1560
30	AAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAC TCGAG	1605

35 (2) INFORMATION FOR SEQ ID NO: 188:

(i) SEQUENCE CHARACTERISTICS:

- 40 (A) LENGTH: 1516 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 188:

45	ATTCCGCATG AGGGGGTCAC GTGGTGGCTG GGCCGGGGAA ATGGCGGCTT CAGGAGAGAG	60
	CGGGACTTCA GCGGCGGAG GCAGACCGA GGAAGCATTT ATGACCTTCT ACAGTGAGGT	120
50	GAAACAAATA GAGAAGAGAG ACTCGGTTCT AACTTCGAAA AATCAGATTG AAAGACTGAC	180
	CCGTCTGGT TCCTCTTACT TCAATTGAA CCCATTGAG GTTCTTCAGA TAGATCCTGA	240
	AGTTACAGAT GAAGAAATAA AAAAGAGGTT TCGGCAGTTA TCCATCTTGG TGCATCCTGA	300
55	CAAAAATCAA GATGATGCTG ACAGAGCACA AAAGGCTTTT GAAGCTGTGG ACAAAGCTTA	360
	CAAGTGTCTA CTGGATCAGG AGCAAAAGAA GAGGGCCCTG GATGTAATTC AGGCAGGAAA	420
60	AGAATACGTG GAACACACTG TGAAAGAGCG AAAAAACAA TTAAAGAAGG AAGGAAAACC	480

	TACAATTGTA GAGGAGGATG ATCTTGAGCT GTTCAAACAA GCTGTATATA AACAGACAAT	540
	GAAACTCTTT GCAGAGCTGG AAATTAAAAG GAAAGAGAGA GAAGCCAAAG AGATGCATGA	600
- 5	AAGGAAACGA CAAAGGGAAG AAGAGATTGA AGCTCAAGAA AAAGCCAAAC GGGAAAGAGA	660
	GTGGCAGAAA AACTTTGAGG AAAGTCGAGA TGGTCGTGTG GACAGCTGCC GAAACTTCCA	720
10	AGCCAATACG AAGGGGAAGA AAGAGAAGAA AAATCGGACC TTCTTGAGAC CACCGAAAGT	780
	AAAAATGGAG CAACGTGAGT GACCGCCCAA GGTCACAGGC ACAGAACCTT TCCCCTGCTA	840
	TCTCCCTTCC TGCTTCGAAG GACTCATTCT TTCTCCAC TTCCACCCCA ACATAGAGTA	900
15	GTATTGCTT TTTAGTCCAT TTTGTTTCA ATACGATTTA ATATCGATCA GAGTAATTCT	960
	TTTGACATT GAAATGAGGG GCTTGGTTTA AAAAAAGACC TTTCCTCTC CCTGCCCTA	1020
20	GAACAACCAG TATTAGAAGG TGCCACCATT GGTGCTGCCT TCTCTTCCA CAGCCTGTAA	1080
	CTCAGTGTT TGTACTTCAC TGAATTGTGA TGGTTAGAAA CTTCGTGGAT AGTTTGTGGA	1140
	AATCATCCAA TTAAACATAC TGCTTAAAC AGTGTGCTG TGACTTCAGA GACAAGCCTG	1200
25	GAAGGGGCAC CTTAGGAAGC CCCTTCGCTT CAGTTGCTCG CTTCCTGGTG TGCTCCCTTC	1260
	GAAGGCCAG ATAAGACAGG GAACACTTGT GAGCACACAG AGCAGCATCT GATGCCCTGT	1320
30	GGTGTGTC ATGTGCCCC TGCTACTGA CCAATCAGTG TGGCATGAGG CCCACGCCAC	1380
	CCAAACCTTT CACTTCCAA AGAGCTAGCC GTCCTCCACC CAGTACCATG TCCTAGCCTG	1440
	TCTGCATTG TTAGTGGTAA TATTCTTTAT GTATAATAAA TTTTATACC CAAAAAAAAA	1500
35	AAAAAAAAA ACTCGA	1516

40 (2) INFORMATION FOR SEQ ID NO: 189:

(i) SEQUENCE CHARACTERISTICS:

- 45 (A) LENGTH: 681 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 189:

50	GCTCCCATGT TGCTGGCTGT CCGTACATCA CCCTGTCCCC TGCAGGAGGG GGCTACAGGC	60
	CATCTCCCTC CTGTAGGCCT CTGACTCCCC TCCACTTTTG GGCCCTCAGC TTATCTCGGG	120
	CAGGGACCA TTGCAGCATC CTCCCCTCCT CNGGACTCAA GGTGCTGAGG TATAAGCCCT	180
55	GGGCCCCAGA TCCCTGRTKA CACCTTCCTG GAGAAGACTC TCAAAAGTGA CTGTATATTT	240
	GAGTTCACCA GCAATAACTC CCCCACTCG AAGCAGGTCC AAACCCMAGG ATCCCAGGT	300
60	CCTTGGGCTC TGTGGCACTG TCTTCCCAAG ATCCTTCCTG TTGCACAATG GGAAACCTAA	360

5 GAGGAAAAAG ACAGGGGCCT GCTTGCCCAG CCATGCGAGG GATTCCATGC CCACCTGCCC 420
 TCTGYCTGCC TCGCTGGAAT GTGGGCCCCT GCTCCCCGTC AGGTTGTGCT GTCTCTGACC 480
 TATGTTTACA TCCCCGAGGG GTTCTGCCT CCTCCCCACC CAGGTCAGGG TGTGGTCCAG 540
 CAGCTTGCTG TGGGGTGCTG ACATGTGTCA CCACTGCCCC CCTTGCCCCC GGGGGGTCA 600
 10 TGGTCTCCTC CTGGATGCTG CTCCTGAAT YTTTTTYYT GAWAAACCYT TTAMAATTAA 660
 AAAAAAAAAA AAAAAACTCG A 681

15

(2) INFORMATION FOR SEQ ID NO: 190:

20 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1014 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 190:

GCCTCAAGCC ACGCATATGA TAATTTCTG GAACATTCAA ATTCAGTGTT TCTACAGCCA 60
 GTTAGTCTAC AAACCATGTC AGCAGCACCA TCAAACCAGA GTCTGCCACT TTTTGTGATC 120
 30 GCTGGATGAT TGCTGGGCAA AGGTGGCCCT TTAGAGCTCT TAAAAGCCCA CAAAAGGCT 180
 ATTCGTAGAG CCACAGTCAA CACATTTGGT TATATGCAA AGGCCATTGG CCTCATGATG 240
 35 TATTTGGCTAC ACTTCTGAAC AACCTCAAAG TTCAAGAAAG GCAGAACAGA GTTTGTACCA 300
 CTGTAGCAAT AGCTATTGTT GCAGAAACAT GTTCACCCCT TACAGTACTC CCTGCCTTAA 360
 TGAATGAATA CAGAGTTCTT GAACTGAATG TTCAAAATGG AGTGTAAAA TCGCTTTCTT 420
 40 TCTTGTTTGA ATATATTGGT GAAATGGGAA AAGACTACAT TTATGCCGTA ACACCGTTAC 480
 TTGAAGATGC TTTAATGGAT AGAGACCTTG TACACAGACA GACGGCTAGT GCAGTGGTAC 540
 45 AGCACATGTC ACTTGGGGTT TATGGATTTG GTTGTGAAGA TTCGCTGAAT CACTTGTGTA 600
 ACTATGTATG GCCCAATGTR TTTGAGACAT CTCCTCATGT AATTCAGGCA GTTATGGGAG 660
 CCCTAGAGGG CCTGAGAGTT GCTATTGGAC CATGTAGAAT GTTGCAATAT TGTTTACAGG 720
 50 GTCTGTTTCA CCCAGCCCGG AAAGTCAGAG ATGTATATTG GAAAATTTAC AACTCCATCT 780
 ACATTGGTTC CCAGGACGCT CTCATAGCAC ATTACCCAAG AATCTACCAA CGATGATAAG 840
 55 RACACCTATA TTCGTTATGA ACTTGACTAT ATCTTATAAT TTTATGTW ATTTKGTGKT 900
 TAATGCACAS TACTTCACAC CTTAACTTG CTTTGATTG GTGATGTAAA CTTTTAAACA 960
 TTGCAGATCA GTGTAGGACT GGTCCATAGG GGAAGAGCTA GGAANTCCAT AGGC 1014
 60

(2) INFORMATION FOR SEQ ID NO: 191:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2779 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 191:

5 TCGCAGCAGG GTGTGTCCAG ATGGTCAGTC TCTGGTGGCT AGCCTGTCCT GACAGGGGAG 60
15 AGTTAAGCTC CCGYTCTCCA CCGTGCCGGC TGGCCAGGTG GGCTGAGGGT GACCGAGAGA 120
CCAGAACCTG CTTGCTGGAG CTTAGTGCTC AGAGCTGGGG AGGGAGGTTC CGCCGCTCCT 180
20 CTGCTGTCTAG CGCCGGCAGC CCTTCCCGGC TTCACTTCCT CCCGCAGCCC CTGCTACTGA 240
GAAGCTCCGG GATCCCAGCA GCCGCCACGC CCTGGCCTCA GCCTGCGGGG CTCCAGTCAG 300
25 GCCAACACCG ACGCGCANTG GGAGGAAGAC AGGACCCTTG ACATCTCCAT CTGCACAGAG 360
GTCCTGGCTG GACCGAGCAG CCTCTCTCTC CTAGGATGAC CTCACCCTCC AGCTCTCCAG 420
TTTTCAGGTT GGAGACATTA GATGGAGGCC AAGAAGATGG CTCTGAGGCG GACAGAGGAA 480
30 AGCTGGATTT TGGGAGCGGG CTGCCTCCCA TGGAGTCACA GTTCCAGGGC GAGGACCGGA 540
AATTCGCCCC TCAGATAAGA GTCAACCTCA ACTACCGAAA GGAACAGGT GCCAGTCAGC 600
CGGATCCAAA CCGATTGAC CGAGATCGGC TCTTCAATGC GGTCTCCCGG GTGTCCCCG 660
35 AGGATCTGGC TGGACTIONA GAGTACCTGA GCAAGACCAG CAAGTACCTC ACCGACTCGG 720
AATACACAGA GGGCTCCACA GGTAAAGACGT GCCTGATGAA GGCTGTGCTG AACCTTAAGG 780
40 ACGGGGTCAA TGCTGCATT CTGCCACTGC TGCAGATCGA CCGGGACTCT GGCAATCCTC 840
AGCCCTGGT AAATGCCAG TGACAGATG ACTATTACCG AGGCCACAGC GCTCTGCACA 900
TGCCATTGA GAAGAGGAGW CTGCAGTGTG TGAAGCTCCT GGTGAGAAT GGGGCCAATG 960
45 TGCATGCCCG GGTCTGCGGC GCTTCTTCCA GAAGGGCCAA GGGACTTGCT TTTATTTCGG 1020
TGAGCTACCC CTCTYTTTGG CCGCTTGAC CAAGCAGTGG GATGTGGTAA GCTACCTCCT 1080
50 GGAGAACCCA CACCAGCCCG CCAGCCTGCA GGCCTGACT CCCAGGGCAA CACAGTCCTG 1140
CATGCCCTAG TGATGATCTC GGACAACCTA GCTGAGAACA TTGCACTGGT GACCAGCATG 1200
TATGATGGGC TCCTCCAAGC TGGGGCCCGC CTCTGCCCTA CCGTGCAGCT TGAGGACATC 1260
55 CGCAACCTGC AGGATCTCAC GCCTCTGAAG CTGGCCGCCA AGGAGGGCAA GATCGAGATT 1320
TTCAGGCACA TCCTGCAGCG GGAGTTTTC GACTGAGCC ACCTTTCCCG AAAGTTCACC 1380
60 GAGTGGTGCT ATGGGCCTGT CCGGGTGTG CTGTATGACC TGGCTTCTGT GGACAGCTGT 1440

GAGGAGAACT CAGTGCTGGA GATCATTTGCC TTTTCATTGCA AGAGCCCGCA CCGACACCGA 1500
 ATGGTCGTTT TGGAGCCCCT GAACAAACTG CTGCAGGCGA AATGGGATCT GCTCATCCCC 1560
 -5 AAGTTCTTCT TAAACTTCCT GTGTAATCTG ATCTACATGT TCATCTTCAC CGCTGTTGCC 1620
 TACCATCAGC CTACCCTGAA GAAGCAGGCC GCCCCTCACC TGAAAGCGGA GGTGGAAC 1680
 10 TCCATGCTGC TGACGGGCCA CATCCTTATC CTGCTAGGGG GGATCTACCT CCTCGTGGGC 1740
 CAGCTGTGGT ACTTCTGGCG GCGCCACGTG TTCATCTGGA TCTCGTTCAT AGACAGCTAC 1800
 TTTGAAATCC TCTTCTGTT CCARGCCCTG CTCACAGTGG TGTCCARGT GCTGTGTTTC 1860
 15 CTGGSCATCG AGTGGTACCT GCCCCTGCTT GTGCTGCGC TGGTGCTGGG CTGGCTGAAC 1920
 CTGCTTTACT ATACACGTGG CTTCCAGCAC ACAGGCATCT ACAGTGTCAT GATCCAGAAG 1980
 20 CCCTGGTGAG CCTGAGCCAG GANNMTGGCG CCCCGAAGCT CCTACAGGCC CCAATGCCAC 2040
 AGAGTCAGTG CAGCCCATGG AGGGACAGGA KGACGAKGGC AACGGGGCCC AGTACAGGGG 2100
 TATCCTGGAA GCCTCCTTGG AGCTCTTCAA ATTACCATC GGCATGGGCG AGCTGGCCTT 2160
 25 CCAGGARCAG CTGCACTTCC GCGGCATGGT GCTGCTGCTG CTGCTGGSCT ACGTGTCTGT 2220
 CACCTACATC CTGCTGCTCA ACATGCTCAT CGCCCTCATG AGCGAGACCG TCAACAGTGT 2280
 30 CGCCACTGAC AGCTGGAGCA TCTGGAAGCT GCAGAAAGCC ATCTCTGTCC TGGAGATGGA 2340
 GAATGCCTAT TGGTGGTGCA GGAAGAAGCA GCGGGCAGGT GTGATGCTGA CCGTTGGCAC 2400
 TAAGCCAGAT GGCAGCCCSG ATGAGCGCTG GTGCTTCAGG GTGGAGGAGG TGAAGTGGC 2460
 35 TTCATGGGAG CAGACGCTGC CTACGCTGTG TGAGGACCCG TCAGGGGCAG GTGTCCCTCG 2520
 AACTCTCGAG AACCCTGTCC TGGCTTCCCC TCCCAAGGAG GATGAGGATG GTGCCTCTGA 2580
 40 GGAAACTAT GTGCCCCTCC AGCTCCTCCA GTCCAACTGA TGGCCCAGAT GCAGCAGGAG 2640
 GCCAGAGGAC AGAGCAGAGG ATCTTTCCAA CCACATCTGC TGGCTCTGGG GTCCCAGTGA 2700
 ATTCTGGTGG CAAATATATA TTTTCACTAA CTCAAAAAAA AAAAAAAAAA AAAAAAAAAA 2760
 45 AAAAAAAAAA AAAAAAGGC 2779

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(2) INFORMATION FOR SEQ ID NO: 192:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 1923 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 192:

	ACCCGCTCCG CTCGCTCCG CTCGGCCCCG CGCGGCCCGT CAACATGATC CGCTGCGGCC	60
	TGGCCTGCGA GCGCTGCCG TGGATCCTGC CCCTGCTCCT ACTCAGCGCC ATCGCCTTCG	120
5	ACATCATCGC GCTGGCCGGC CGCGGCTGGT TGCAGTCTAG CGACCACGGC CAGACGTCTT	180
	CGCTGTGGTG GAAATGCTCC CAAGAGGGCG GCGGCAGCGG GTCCTACGAG GAGGGCTGTC	240
10	AGAGCCTCAT GGAGTACGCG TGGGGTAGAG CAGCGGCTGC CATGCTCTTC TGTGGCTTCA	300
	TCATCCTGGT GATCTGTTTC ATCCTCTCCT TCTTCGCCCT CTGTGGACCC CAGATGCTTG	360
	TCTTCCTGAG AGTGATTGGA GGTCTCCTTG CCTTGCTGC TGTGTTCCAG ATCATCTCCC	420
15	TGGTAATTTA CCCCCTGAAG TACACCCAGA CCTTCACCTT TCATGCCAAC CSTGCTGTCA	480
	CTTACATCTA TAACTGGGCC TACGGCTTTG GGTGGGCAGC CACGATTATC CTGATYGGCT	540
20	GTGCCCTTCTT CTTCTGCTGC CTCCCCAACT ACGAAGATGA CCTTCTGGGC AATGCCAAGC	600
	CCAGGTACTT CTACACATCT GCCTAACTTG GGAATGAATG TGGGAGAAAA TCGCTGCTGC	660
	TGAGATGGAC TCCAGAAGAA GAACTGTTT CTCCAGGCGA CTTTGAACCC ATTTTGTGGC	720
25	AGTGTTCATA TTATTAACT AGTCAAAAAT GCTAAAATAA TTTGGGAGAA AATATTTTTT	780
	AAGTAGTGTT ATAGTTTCAT GTTTATCTTT TATTATGTTT TGTGAAGTTG TGTCTTTTCA	840
30	CTAATTACCT ATACTATGCC AATATTTCTT TATATCTATC CATAACATTT ATACTACATT	900
	TGTAAGAGAA TATGCACGTG AAACCTAACA CTTTATAAGG TAAAAATGAG GTTTCCAAGA	960
	TTTAATAATC TGATCAAGTT CTTGTTATTT CCAAATAGAA TGGACTCGGT CTGTTAAGGG	1020
35	CTAAGGAGAA GAGGAAGATA AGGTTAAAAG TTGTTAATGA CCAAACATTC TAAAAGAAAT	1080
	GCAAAAAAAA AGTTTATTTT CAAGCCTTCG AACTATTTAA GGAAAGCAAA ATCATTTCTT	1140
40	AAATGCATAT CATTTGTGAG AATTTCTCAT TAATATCCTG AATCATTCAT TTCAGCTAAG	1200
	GCTTCATGTT GACTCGATAT GTCATCTAGG AAAGTACTAT TTCATGGTCC AAACCTGTTG	1260
	CCATAGTTGG TAAGGCTTTC CTTTAAGTGT GAAATATTTA GATGAAATTT TCTCTTTTAA	1320
45	AGTTCTTTAT AGGGTTAGGG TGTGGGAAAA TGCTATATTA ATAAATCTGT AGTGTMTTGT	1380
	GTTTATATGT TCAGAACAG AGTAGACTGG ATTGAAAGAT GGACTGGGTC TAATTTATCA	1440
50	TGACTGATAG ATCTGGTTAA GTTGTGTAGT AAAGCATTAG GAGGGTCATT CTTGTCACAA	1500
	AAGTGCCACT AAAACAGCCT CAGGAGAATA AATGACTTGC TTTTCTAAAT CTCAGGTTTA	1560
	TCTGGGCTCT ATCATATAGA CAGGCTTCTG ATAGTTTGCA ACTGTAAGCA GAAACCTACA	1620
55	TATAGTTAAA ATCCTGGTCT TTCTTGGTAA ACAGATTTTA AATGTCTGAT ATAAAACATG	1680
	CCACAGGAGA ATTCCGGGAT TTGAGTTTCT CTGAATAGCA TATATATGAT GCATCGGATA	1740
60	GGTCATATATG ATTTTTFACC ATTTGACTT ACATAATGAA AACCAATTCA TTTTAAATAT	1800

CAGATTATTA TTTTGTAAGT TGTGGAAAAA GCTAATTGTA GTTTTCATTA TGAAGTTTTC 1860
 CCAATAAACC AGGTATTCTA AAAAAAAAAA AAAAAAACTN GAGGGGGGGC CCGGTACCCA 1920
 -5 ATT 1923

10 (2) INFORMATION FOR SEQ ID NO: 193:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2346 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 193:

20 AGGCTCAGGG GGACACTCTC AAAATTACAC AGCTTTTAAC AGGTGGCAGA ATTGGGGTTC 60
 AGACCCAGAT CTGGGTTCAG GTCACTCATG GTGTGATTGC GGCATTCTCT CCCGCATCTG 120
 25 GGCTTGCCA TCTCTCTCTC CGAGTGGACA TGGAGAGGAC GGGGGCCCAG CAGCTGGATG 180
 GCTGCAGGGG ATCAAGTCTT CTCTGGGGCT GGGCACGTAN AAGAGCATGT GGCTGGTGGA 240
 CGGCATGCCT GGCTCCTCAC CTGGCAGTCT GCCTGCCCTG CTAACCGGCT GTCTCTTGTT 300
 30 CCCCTAGTGC CCTCGGCTAG CATGACCCGC CTGATGCGWT SCCGCACAGC CTCTGGTTCC 360
 AGCGTCAITC TCTGGATGGC ACCCGCAGCC GCTCCACAC CAGCGAGGGC ACCCGAAGCC 420
 GCTCCACAC CAGCGAGGGC ACCCGCAGCC GCTCGCACAC CAGCGAGGGG GCCCACCTGG 480
 35 ACATCACCCC CAACTCGGGT GCTGCTGGGA ACAGNGCCGG GCCCAAGTCC ATGGAGGTCT 540
 CCTGCTAGGC GGCTGCCCCA GCTGCCGCCC CCGACTCTG ATCTCTGTAG TGGCCCCCTC 600
 40 CTCCCCGGCC CTTTTCGCC CCCTGCCTGC CATACTGCGC CTAACCTGGT ATTAATCCAA 660
 AGCTTATTTT GTAAGAGTGA GCTCTGGTGG AGACAAATGA GGTCTATTAC GTGGGTGCC 720
 TCTCCAAAGG CGGGGTGGCG GTGGACCAA GGAAGGAAGC AAGCATCTCC GCATCGCATC 780
 45 CTCTTCCATT AACCAGTGGC CGGTGCCCAC TCTCTCTCCC TCCCTCAGAG ACACCAAAT 840
 GCCAAAACA AGACGCGTAC AGCACACACT TCACAAAGCC AAGCCTAGGC CGCCCTGAGC 900
 50 ATCTTGGTTC AAACGGGTGC CTGGTCAGAA GGCCAGCCGC CCACTTCCCG TTTCTCTTT 960
 AACTGAGGAG AAGCTGATCC AGTTTCCGGA AACAAAATCC TTTTCTCATT TGGGGAGGGG 1020
 GGTAATAGTG ACATGCAGGC ACCTCTTTTA AACAGGCAA ACAGGAAGGG GGAAAAGGTG 1080
 55 GGATTCATGT CGAGGCTAGA GGCATTTGGA ACAACAAATC TACGTAGTTA ACTTGAAGAA 1140
 ACCGATTTTT AAAGTTGGTG CATCTAGAAA GCTTTGAATG CAGAAGCAA CAAGCTTGAT 1200
 60 TTTTCTAGCA TCCTCTTAAT GTGCAGCAA AGCAGGCRAC AAAATCTCCT GGCTTTACAG 1260

5 AAAAAATAT TTCAGCAAAC GTTGGGCATC ATGGTTTTTG AAGGCTTTAG TTCTGCTTTC 1320
 TGCCTCTCCT CCACAGCCCC AACCTCCAC CCCTGATACA TGAGCCAGTG ATTATTCTTG 1380
 TTCAGGGAGA AGATCATTTA GATTTGTTTT GCATTCCCTTA GAATGGAGGG CAACATTCCA 1440
 CAGCTGCCCT GGCTGTGATG AGTGTCTTTC CAGGGGCCGG AGTAGGAGCA CTGGGGTGGG 1500
 10 GCGGAATTG GGGTTACTCG ATGTAAGGA TTCTTGTGTTG TTGTGTGAG ATCCAGTGCA 1560
 GTTGTGATTT CTGTGGATCC CAGCTTGGTT CCAGGAATTT TGTGTGATTG GCTTAAATCC 1620
 AGTTTTCAAT CTTGACAGC TGGGCTGGAA CGTGAATCA GTAGCTGAAC CTGTCTGACC 1680
 15 CGGTACGTT CTGGATCCT CAGAACTCTT TGCTCTTGTG GGGGTGGGG TGGGAATCA 1740
 CTGGGGAGC GTGGCTGAG AAAATGTAAG GATCTTGAA TACATATTCC ATGGGACTTT 1800
 20 CCTTCCCTCT CCGCTTCCT CTTTTCTGTC TCCCTAACCT TTCGCCGAAT GGGGCAGCAC 1860
 CACTGACGTT TCTGGGCGC CAGTGGCGCT GCCAGGTTCC TGTACTACTG CCTTGTACTT 1920
 TTCATTTTGG CTCACCGTGG ATTTTCTCAT AGGAAGTTTG GTCAGAGTGA ATTGAATATT 1980
 25 GTAAGTCAGC CACTGGGACC CGAGGATTTT TGGGACCCCG CAGTTGGGAG GAGGAAGTAG 2040
 TCCAGCCTTC CAGGTGGCGT GAGAGGCAAT GACTCGTTAC CTGCCGCCCA TCACCTTGGA 2100
 30 GGCCTTCCCT GGCCTTGAGT AGAAAAGTCG GGGATCGGG CAAGAGAGGC TGAGTACGGA 2160
 TGGGAACTA TTGTGCACAA GTCTTTCCAG AGGAGTTTCT TAATGAGATA TTGTATTATA 2220
 TTTCCAGACC AATAAATTTG TAACTTTGCA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA 2280
 35 AAAAAAAAAA AAAAAAACT CGAGGGGGC CCGTACCCAA TTCGCCGTAT ATGATCGTAA 2340
 ACAATC 2346

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(2) INFORMATION FOR SEQ ID NO: 194:

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- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 3054 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

50

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 194:

TATCTGAACC ACCCTTTATT CTACATATGA TAGGCAGCAC TGAAATATCC TAACCCCTTA 60
 55 AGCTCMAGGT GCCCTGTGN ACGAGCAACT GGACTATAGC AGGGCTGGGC TCTGTCTTCC 120
 TGGTCATAGG CTCACTCTTT CCCCCAAATC TTCTCTGGA GCTTTGCAGC CAAGGTGCTA 180
 60 AAAGGAATAG GTAGGAGACC TCTTCTATCT AATCCTTAAA AGCATAATGT TGAACATTCA 240

	TTCAACAGCT GATGCCCTAT AACCCCTGCC TGGATTTCCTT CCTATTAGGC TATAAGAAGT	300
	AGCAAGATCT TTACATAATT CAGAGTGGTT TCATTGCCCTT CCTACCCTCT CTAATGGCCC	360
- 5	CTCCATTTAT TTGACTAAAG CATCACACAG TGGCACTAGC ATTATACCAA GAGTATGAGA	420
	AATACAGTGC TTTATGGCTC TAACATTACT GCCTTCAGTA TCAAGGCTGC CTGGAGAAAG	480
10	GATGGCAGCC TCAGGGCTTC CTTATGTCTT CCACCACAAG AGCTCCTTGA TGAAGGTCAT	540
	CTTTTTCCTCC TATCCTGTTC TTCCCTCTCC CGCTCCTAAT GGTACGTGGG TACCCAGGCT	600
	GGTCTTGGG CTAGGTAGTG GGGACCAAGT TCATTACCTC CCTATCAGTT CTAGCATAGT	660
15	AAACTACGGT ACCAGTGTTA GTGGGAAGAG CTGGGTTTTC CTAGTATACC CACTGCATCC	720
	TACTCCTACC TGGTCAACCC GCTGCTTCCA GGTATGGGAC CTGCTAAGTG TGAATTACC	780
20	TGATAAGGGA GAGGAAATA CAAGGAGGGC CTCTGGTGT CTGCGCTCA GCCAGCTGCC	840
	CACAAGCCAT AAACCAATAA AACAAGAATA CTGAGTCAGT TTTTATCTG GGTCTCTTC	900
	ATTCCCACTG CACTTGGTGC TGCTTTGGCT GACTGGGAAC ACCCCATAAC TACAGAGTCT	960
25	GACAGGAAGA CTGGAGACTG TCCACTTCTA GCTCGGAAC TACTGTGTAA ATAACTTTC	1020
	AGAACTGCTA CCATGAAGTG AAAATGCCAC ATTTTGCTTT ATAATTCTA CCCATGTTGG	1080
30	GAAAACTGG CTTTTCCTCA GCCCTTCCA GGCATAAAA CTCAACCCCT TCGATAGCAA	1140
	GTCCCATCAG CCTATTATTT TTTTAAAGAA AACTTGCACT TGTTTTCTT TTTACAGTTA	1200
	CTTCTTCTT GCCCCTAAT TATAAACTCT AAGTGTAATA AAAAGTCTTA ACAACAGCTT	1260
35	CTTGCTTGTA AAAATATGTA TTATACATCT GTATTTTAA ATTCTGCTCC TGAAAAATGA	1320
	CTGTCCCATT CTCCACTCAC TGCAATTGGG GCCTTTCCTA TTGGTCTGCA TGTCTTTTAT	1380
40	CATTGCAGGC CAGTGGACAG AGGGAGAAGG GAGAACAGGG GTCGCCAACA CTTGTGTTGC	1440
	TTTCTGACTG ATCCTGAACA AGAAAGAGTA AACTGAGGC GCTCGCTCCC ATGCACAACT	1500
	CTCCAAAACA CTTATCCTCC TGCAAGAGTG GGCTTTCAG GGTCTTTACT GGAAGCAGT	1560
45	TAAGCCCCCT CTCACCCCT TCCTTTTTC TTTCTTTACT CCTTTGGCTT CAAAGGATTT	1620
	TGGAAAAGAA ACAATATGCT TTACACTCAT TTTCAATTTC TAAATTGCA GGGGATACTG	1680
50	AAAAATACGG CAGGTGGCCT AAGGCTGCTG TAAAGTTGAG GGGAGAGGAA ATCTTAAGAT	1740
	TACAAGATAA AAAACGAATC CCCTAAACAA AAAGAACAAT AGAACTGGTC TTCCATTTTG	1800
	CCACCTTTC TGTTTCATGAC AGCTACTAAC CTGGAGACAG TAACATTTCA TTAACCAAAG	1860
55	AAAGTGGGTC ACCTGACCTC TGAAGAGCTG AGTACTCAGG CCACTCCAAT CACCCTACAA	1920
	GATGCCAAGG AGGTCCCAGG AAGTCCAGCT CCTTAACTG ACGCTAGNCA ATAAACCTGG	1980
60	GCAAGTGAGG CAAGAGAAAT GAGGAAGAAT CCATCTGTGA GGTGACAGGC AAGGATGAAA	2040

	GACAAAGAAG GAAAAGAGTA TCAAAGGCAG AAAGGAGATC ATTTAGTTGG GTCTGAAAGG	2100
	AAAAGTCTTT GCTATCCGAC ATGTACTGCT AGTACCTGTA AGCATTTTAG GTCCCAGAAT	2160
5	GGAAAAAAA ATCAGCTATT GGTAATATAA TAATGTCCTT TCCCTGGAGT CAGTPTTTTTT	2220
	AAAAAGTTAA CTCCTTAGTTT TTA CTGTGTTT AATCTAAAA GAGAAGGGAG CTGAGGCCAT	2280
10	TCCCTGTAGG AGTAAAGATA AAAGGATAGG AAAAGATTCA AAGCTCTAAT AGAGTCACAG	2340
	CTTTCCCAGG TATAAACCTT AAAATTAAGA AGTACAATAA GCAGAGGTGG AAAATGATCT	2400
	AGTTCTGAT AGCTACCCAC AGAGCAAGTG ATTTATAAAT TTGAAATCCA AACTACTTTC	2460
15	TTAATATCAC TTTGGTCTCC ATTTTTCCTT GGACAGGAAA TATGTCCCCC CCTAACTTTC	2520
	TTGCTTCAAA AATTAAAATC CAGCATCCCA AGATCATTCT ACAAGTAATT TTGCACAGAC	2580
20	ATCTCTCAC CCCAGTGCCT GTCTGGAGCT CACCCAAGGT CACCAAACAA CTGGTTGTG	2640
	AACCNAACTG CCTTAACCTT CTGGGGGAGG GGGATTAGCT AGACTAGGAG ACCAGAAGTG	2700
	AATGGGAAAG GGTGAGGACT TCACAATGTT GGCCTGTCAG AGCTTGATTA GAAGCCAAGA	2760
25	CAGTGGCAGC AAAGGAAGAC TTGGCCCAGG AAAAACCTGT GGGTTGTGCT AATTCTGTCT	2820
	CAGAAAATAG GGTGGACAGA AGCTTGTTGG GTGCATGGAG GAATTGGGAC CTGGTTATGT	2880
30	TGTTATCTC GGACTGTGAA TTTTGGTGAT GTAAACAGA ATATCTGTGTA AACCTAATGT	2940
	CTGTATAAAT AATGAGCGTT AACACAGTAA AATATTCAAT AAGAAGTCAA AAAAAAAAAA	3000
	AAAAAACTCG AGGGGGGGCC CGGTACCCAA TTTNCCAAAT AGAGATNGTA TTAC	3054
35		

(2) INFORMATION FOR SEQ ID NO: 195:

- 40 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 907 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear
- 45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 195:

	GGCAGAGCTC GTGGCCGNAA CTTTPTCTGC TCCTGGCTGC CACCTACTGG CTGGCCGCGG	60
50	CCCTGGCCTG GGCCTGCACC AGCCTGCGNG CGGGCTCCCA CAGCAGCCCC CTTCCAAGCA	120
	GCGTCCCCAC ACCGCGCACC TTCTGCGGGA ACGTGCTCGC CGTGCCGGGG ACCATATGGA	180
55	CGGAAGGCTT TGTGCTCACC TACAAGCTGG GTGAGCAGGG TGCCAGCAGC CTGTTGATCC	240
	TCTTGGCTCC TGCTGGAGCA CGAGCGGCGT TTCTGTCTCC GAGTTGGGAC TGTGGAATGG	300
	TGTGGGTGCT GTGGTCTGCT CCATCGCTGG CTCCTCCCTG GGTGGGACCT TGCTGGCCAA	360
60	GCACTGAAAA CTGCTGCCTC TGTGAGGTCG GTGCTGCGCT TCCGCCCTCG GGGCCTAGCC	420

5 TGTCAGACTG CCTTGGTCTT CCACCTTGGA CACCCTGGGG GCCAGCATGG ACGCTGGCAC 480
 AATCTTGAGA GGGTCAGCCT TGCTGAGCCT ATGTCTGCAG CACTTCTTGG GARGCCTGGT 540
 CACCACAGTC ACCTTCACTG GGAATGATGC GCTGCAGCCA GCTGGCCCCC AGGGCCTTGC 600
 AGGCCACACA CTACAGCCTT CTGGCCACGC TGGAGCTGCT GGGGAAGCTG CTGCTGGGCA 660
 10 CTYTGSCGG AGGGCCTGGC TGATGGGTTG GGGCCACATC CCTGCTTCTT GCTCCTGCTC 720
 ATCTCTCTG CCTTCCCGT TCTGTACCTG GACCTAGCAC CCAGCACCTT TCTCTGAGCT 780
 15 GAGTGGCTGG AGTGGTCAAT AAAGCCACAT GTGCTGTGG CCAAAAAA AAAAAAAAAA 840
 AAAAAAAAAA AAAAAAATG GAGGGGGGGC CCGGTACCCA AATCGCCGGA TATGATCGTA 900
 ACAATC 907

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(2) INFORMATION FOR SEQ ID NO: 196:

25 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1290 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 196:

GGCACGAGGA GGGACAGGGA GTGGGCAAGG GGAAGAAGCA GCTTATTTGA CTAACCAGCC 60
 35 CCTCTGTGGT CCACCAGCGT CTTGGCTTGG TGGGAGGGCT CTCAATCAGC AGGGCCCCAG 120
 KAGGGCAAGA AGAAGTGGGG CAAAGCCTGG CGCTCGGCCG CGGTGCGGCG AGCTTTGCMA 180
 40 TCTGGAGCCA CGCCTCCTCC AGGCCATGCT CCTTGAACCT GGAAATGTCA ACCGGAGCCC 240
 TTAACACCAG CCTCCAGCA TCTAATAGAC TTGAATCTAC TCTAAACGAA TATTTAATCC 300
 AACCTCAACT ACATTGTAGC TCAGTCCAAC GACTAACCCT GAAATGGGGG TGTTCAGCC 360
 45 TTCAGCGAGA TGGCCAAGCG GTCCCTGGG GGCTGTGGCA GCGGGCTTAT CCTTCTCTGT 420
 TGCCAACCTT GCCGTCCGAC CTCCTCCGCC CCCATGCGGT GACCCCGTCC GTGTCTGTGT 480
 CTGTCCATAC GTGTGAGTCC AGCTAAAAAG ACAAACAGA ACCCGTGGGC CCAGCTCGGA 540
 50 AGGTGCGTGG AGAAGGCTCC GACGTCTCCG AAGTGCAGCC CTGGGATGG CATTCGGTTG 600
 TGTGCCTTAT TCCTGGAGAA TCTGTATACG GCTCGCCTAT AAGAAATATA GCCTCTTCAT 660
 55 GCTGTATTAA AAGGACTTPT AAAAGCAAAA AAAAAAAAAA AAAAACTCGA GGGGGGGCCC 720
 GGTACCCAAT TCGCCCAATA GTGAGTCGTA TTACAATTCA CTGGGCCGTC STTTTAACAA 780
 60 CGTCGTGAAC TGGGAAAACC CTGGCGTTTA CCAACTTAA TCGCCTTGCA GCACATCCCC 840

CTTTCGCCAG CTGGCGTTAA TAGCGAAAAA NGCCCGCACC CGAATCGCCC TTCCCAACAG 900
 TTTGCGCAGC CCTGAATGGC GAAATGGCAA ATTGTAAGCG TTTAATATTT TKKTTAAAAAT 960
 - 5 TCCNCGTTWA AWTTTTGTGTT TAAATCARCT CAATMTTTTT AACCCAATAA GSCCGAAATC 1020
 CGGCAAATCC CCYTTATTAA TTCCAAAAAA ATAAACCSAA AAWGGGTTTG AATTTTITKT 1080
 10 TTCCCCAYTT TTGGAAACAA AWTYCCCCCT TTTTAAAAAA GTTGAACCC CCAMCCYTCC 1140
 AAAGGGGAAA AAACSYTTTT YTGGGGGNA ANGGGGCCCC CNTACTTTNA ACAYCCCCC 1200
 CCAAWCAATT TTTTGGGGG GTCCNAAAG GTCCCCCTAA AANCTTTTTT CGGAACCCNA 1260
 15 AGGGGANCCC CCCATTTAAA ATTTTNGGTN 1290

20 (2) INFORMATION FOR SEQ ID NO: 197:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1020 base pairs

(B) TYPE: nucleic acid

25 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 197:

30 GGTGTGCCTG GATGGTCGTG TAGGTGAGTT TTACCAAGGA TTATGGTAAC AAATGAGTGA 60
 GACCTCTATG GAGAAAATAT TGAAGNNCAT TAAAGAAGAC CTCATANTAG GAGAGAATGT 120
 SCTTTGGAGG ATTTGTATTG AGCTTTTACA GTATTCATTT TTCAACTCAA GGCAATGGCT 180
 35 TTCTACACCA ACTCTAATCC ATAAACGGGT CTTATGACAT CTATGAAGTA GTAGCAAGAC 240
 ATGCTTAGTG TGTATTTCTC TCTTTGAGAC ACTGTAATTT CTACCAGAAA TTTCCAGAGC 300
 40 ATTATGTAGG TAGAAAAAAA TGCAAGCAAG CTGTTAAAGA TCTTGGATCC CATTATATAG 360
 TATGTATAGC TGAAATCTGT AATCAATCA CTMTTCTCT TTTATCCTCT AACCAAAAAA 420
 TTGTTTAAIT TTGCATCCCA AATGTTTTTA ATCTTTGTAT ATTTTTTAAA AAYCCTTTTC 480
 45 TCCTCATCAT TGCCTTTTTT GTGGTTGTAA ATAGACTTAC TTGCACTTTG AAGATGAGTT 540
 ACTCCTTGTC ATCTTACAAA TATGTGATAT GGTAATTTTC ATAACAGATG TCAGTTTGA 600
 50 ACCAAGAATT GGTGATTTGT TTATAAGAAA AAAACTGGCT TCATTTCTGT GAAATTGCTC 660
 TTTGAAAATT TCTTTTTACA CGTGAAGCC AACTGAGATA CCGTGATGGT GTTGATTTCT 720
 TTCAATGATG CTTACCATCT ATTTTAGCCA CTGAGCCTTT TATTATTTGT CTATTTGTAA 780
 55 AGTTTATTG TCTTAACCTA TTTAATAAAT ATACTGTTTA TCTGTTTCTG AATGGGGACT 840
 GAACTTTTGT GATATTGATA TTGATTTGAA AATATTTTGG AATTTTTTCT ACTTGAAAIT 900
 60 TTAGAAATCT AATKGAAAAT TCTATAATGT ACTGAAAGTA WGGTTGTGTA CAGTGAKCAC 960

TCTCTAATAA TATGATGNCT TGCCCTAAAN GAGGNGGGAC ATGTCCCACT TTCCACCACG 1020

5

(2) INFORMATION FOR SEQ ID NO: 198:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 524 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

15

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 198:

AATTCCCGAA GCTGAGGGTT GTGTGCCNFC GGGCGAGCCA AGTCTTTTGA CCGGACCCCTT 60
CCCGGCGCAG AAGANCTGAA GTTGATTTGA GAGCCTGTKT TTGGGGTTTA GCCGAGCTGC 120
TGCGGGCTTY GTCGCCGGCC AGGACACAAG YTACTTGCAA CGGGGCGGCG CCTGGCTTAT 180
GATGTTCTTC AACCCAGGGG CGGCCTCTGC CCTCTACTCG TGCCAGGCCC ACTTGCCAGG 240
CAGGAGCCCT CCCCAAGCCT TCAGGGCTGC TCGGAGTCAC CTGTTGGAAT GGAATAAAG 300
GACCCCTGTG TGGGAACAGG TGCTCCAAAC ACCCTGCTGC TGGCTGCCAG GCAGGCCCTC 360
TGGAAGGGAA GGGGCAGGAC TCATCAGGAC CTCCCTGGAC CCTGCAGGGC AGGCAGTTGG 420
CCCAGGCCCA AGCATTTGGC TCTGCTTGCC CCAAGGGGAC AGGAAGCCTC TTGGGCCTCT 480
TCCCTTCTTG GACAAGGCCC CCTGCCTTTG CCTCACATAA ACTG 524

35

(2) INFORMATION FOR SEQ ID NO: 199:

40

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 332 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 199:

GTGATACAAG GAAGGGTGAT CATCATCTGT CACCATGCAA TTCTGCTCA CAGCCTTTCT 60
GTTGGTGCCA CTCTGGCTC TTTGTGATGT CCCCATATCC CTAGGCTTCT CCCCCTCCTA 120
GAAGGGCTTC TTGATAGATT AGAAAATAAG AATGAGTGAC ATTTCTTATG TGCATATAAG 180
AAGGAGCCAC AAGACATGTC TTTTAAATAA AAGGACAGTG TCCATCCTTT TAGCTGCCGA 240
ATAGAACCTT GGTCTCATCC TCCTGGAGCT AGGSCTTAAA ACAGCTTCTG TGTTCCTSAT 300
TKGTCTCART GTTTTGCCAA GGTTCCTATC GG 332

60

(2) INFORMATION FOR SEQ ID NO: 200:

5

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 376 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

10

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 200:

CCAGGGAAGC CCCARGCCTG TCCTGAATTG ACATCAGTGC TTCCCTGAAC TGCCTCCCCC 60
 15 ACCCCTGGGC ATTATCCCAG GAACTTATG TTTTCTAGAA GCTAAGCAGC TGCTGGGACT 120
 CAGGGACTGG TGCAGGTAGG CTGAGTGGCA GCTCAGTCCT AGAAGGTCTC TGAAGATCTG 180
 GACTGAGGAC CYTGCTACTC CCCAAGCCAG AGCCCATCAG CCAGGCCTGC TGTGAGCCAC 240
 20 CTGCCTGTGG AGTGCTGAGC TCAACCAAAG GCTGGCAAGC TCTGGGCCTC ATTTAAGGGA 300
 TTCTGATGAG CCGATGGGCC CTGGAGGCAG CCCATTAAAG CATCTGGCTC GTTTTGGAA 360
 25 AAAAAAAAAA AAAAAG 376

30

(2) INFORMATION FOR SEQ ID NO: 201:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1192 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 201:

CCCAGTATAT TTCTATAACA TTTATTTTAG TGAAGTTATA ATGTTTCTTT GTATTAAATT 60
 ATTAGATTAT ATCTTTAGAT AATATIGTTA CTNAATTAGT AGGTAATATA TATTTTATTC 120
 AAAAATAAAT TGTGCATCTA ATGCTACCA ATTAATGTAC TTGTAGATGT ATCTTATCTT 180
 45 AACTTGAGTC TTTGCTGCCC CTAATGAGGT GTGAAGGACT CTTCTCCCCT GGGGAAGTTT 240
 TTCTTTTTC A GGAGGAGGA GGGCTTTCCC AGGTAATGTG TCTAGAGTGT TGGGCAGAAR 300
 50 AATCTGGGAC CACACCACAC CAGTTCTCTC CTTAATCCAC GTCATTTGCC TTCTATCCCA 360
 GCTATGTTTC CAGTGTCCTC TGGGTGTTTC CAAGAGCAAC AAGAAAYGAA TAAATCTCTG 420
 KTGAGTTGTT TATTTGTCTC TCACTTGTGT TTACACTGTA WTTTCTGAGT TTATGGGTGT 480
 55 CTGTGAATTA AAAAGGAAAA GTRGAAATAA GTAAACTCA GGTGAAGGA AATATACATA 540
 AATAAGATAA AGCTGACCTG TAGATATARR CAGGTATATA RAGCTTAGAG TTGTCTAAGT 600
 60 TGRGTGCAAA KTTTCCTCTG ATCTTCTGTA TGCCGARACA AAAAAGGCAG TCATGTTTGT 660

WATGTGATTG GAATGGAACC CGARAAGAGA GCAYGCTGTG TTCTTGGGGA CAGGAAAGCT 720
 TGYGTGCACC AAGTCTKAAC CACCACCTTC ATGGGACATA GRTTATGTGC TGGAACATAT 780
 -5 TTCACACCGG CCTGGCAGTA AACACTTGTA GTGTGTGCA GTGGAAACGG TCATCTTCCG 840
 CTAAAGCACG GCGTGTGTG CAGCGGAAAT GGTTCATCTGC TGCTAAAACA CAGCTTCCAT 900
 10 CGTAATGTAT GCTCCTTACT CAAAGAGTGT GGTCCCAAAC AGCCTTTGGG AGGTCTCCT 960
 TGATTCATGG ATGAAACCTG GAACATCTTG AGGACTGAGT TAACCATAGG TCCTTAAATA 1020
 ACTCTCCACA CGTTTTCTT AGTTTATCTC TACATGCAGG GTGTGCAGCA GCCTGTTCAA 1080
 15 AGTCATATTT TCTGGGAAAT ATTTCCAGTG TTTATTTGCA CTTTAGCCCA CTCTGTGTAG 1140
 CCTTATTTCT TCTAAACTCA CCATTAATCT GAATAATAGT CAAATTTAGG GG 1192
 20

(2) INFORMATION FOR SEQ ID NO: 202:

25 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 589 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 202:

ATCTTGGGCT ATCTTTGACA GGGGATTCCT GCAAGTTGAT GCTTTCTACA AGTGAATATA 60
 35 GTCAGTCCCC AAAGATGGAG AGCTTGAGTT CTCACAGAAT TGATGAAGAT GGAGAAAACA 120
 CACAGATTGA GGATACGGAA CCCATGTCTC CAGTTCTCAA TTCTAAATTT GTTCCTGCTG 180
 AAAATGATAG TATCCTGATG AATCCAGCAC AGGATGGTGA AGTACAAC TGAGCAGAAATG 240
 40 ATGACAAAAC AAAGGGAGAT GATACAGACA CCMGGGATGA CATTAGTATT TTAGCCACTG 300
 GTTGCAAGGG CAGAGAAGAA ACGGTAGCAG AAGATGTTTG TATTGATCTC ACTTGTGATT 360
 45 CGGGGAGTCA GGCAGTTCCG TCACCAGCTA CTCGATCTGA GGCACCTTCT AGTGTGTTAG 420
 ATCAGGAGGA AGCTATGGAA ATTAAGAAGC ACCATCCAGA GGAGGGGTCT TCAGGGTCTG 480
 AGGTGGAAGA AATCCCTGAG ACACCTTG TG AAAGTCAAGG AGAGGAACTC AAAGAAGAAA 540
 50 ATATGGAGAG TGTCCGTTG CACCTTCTC TGACTGAAAC TCAGTCCCA 589

55

(2) INFORMATION FOR SEQ ID NO: 203:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 847 base pairs
 60 (B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 203:

5
GGCACGAGCG CAAGCTGCTG GCCGCCATCA ACGCGTTCCG CCAGGTGCGG CTGAAACACC 60
GGAAGCTCCG GGAACAAGTG AACTCCATGG TGGACATCTC CAAGATGCAC ATGATCCTGT 120
10 ATGACCTGCA GCAGAATCTG AGCAGCTCAC ACCGGGCCCT GGAGAAACAG ATTGACACGC 180
TGGCGGGGAA GCTGGATGCC CTGACTGAGC TGCTTAGCAC TGCCCTGGGG CCGAGCAGCT 240
TCCAGAATCC AGCCAGCAGT CCAAGTAGCT GGACCCACGA GGAGGAACCA GGCTACTTTC 300
15 CCCAGTACTG AGTGGTGGAC ATCGTCTCTG CCACTCCTGA CCAGCCTGAA CAAAGCACCT 360
CAAGTGCAAG GACCAAAGGG GGCTGGCTT GGATGGGTTG GCTTGCTGAT GGCTGCTGGA 420
20 GGGGACGCTG GCTAAAGTGG GGAGGCCTTG GCCCACCTGA GGCCCCAGGT GGGAACATGG 480
TCACCCACAC TCTGCATACC CTCATCAAAA ACACTCTCAC TATGCTGCTA TGGACGACCT 540
CCAGCTCTCA GTTACAAGTG CAGGCGACTG GAGGCAGGAC TCTTGGGTCC CTGGGAAAGA 600
25 GGGTACTAGG GGCCCGGATC CAGGATCTG GGAGGCTTCA GTTACCGCTG GCCGAGCTGA 660
AGAACTGGGT ATGAGGCTGG GGCGGGGCTG GAGGTGGCGC CCCCTGGTGG GACAACAAAG 720
30 AGGACACCAT TTTTCCAGAG CTGCAGAGAG CACCTGGTGG GGAGGAAGAA GTGTAACTCA 780
CCAGCCTCTG CTCTTATCTT TGTAATAAAT GTTAAAGCCA GAAAAAAAAA AAAAAAAAAA 840
AAAAAAAA 847
35

(2) INFORMATION FOR SEQ ID NO: 204:

40 (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 852 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
45 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 204:

50 ACAAACATAC TCGCAGGAAG GAGTCTCATG CTGCCCGCAG CATCAGCGCA ACNCNTGGCC 60
GCCATCAACG CGTTCGCCCA GGTGCGGCTG AAACACCGGA AGCTCCGGGA ACAAGTGAAC 120
TCCATGGTGG ACATCTCCAA GATGCACATG ATCCTGTATG ACCTGCAGCA GAATCTGAGC 180
55 AGCTCACACC GGGCCCTGGA GAAACAGATT GACACGCTGG CGGGAAGCT GGATGCCCTG 240
ACTGAGCTGC TTAGCACTGC CCTGGGGCCG AGGCAGCTTC CAGAACCCAG CCAGCAGTCC 300
AAGTAGCTGG ACCCACGNAG GAGGAACCAG GCTACTTTCC CCAGTACTGA GGTGGTGGAC 360
60

ATNCGTCTCT TGCCTCTCCN TGNACCCAGC CCTGAACAAA GCACCTCAAG TGCAAGGACC 420
 AAAGGGGGCC CTGGCTTGGA GTGGGTGGC TTGCTGATGG CTGCTGGAGG GGACGCTGGC 480
 -5 TAAAGTGGGK AGGCCTTGGC CCACCTGAGG CCCAGGTGG GAACATGGTC ACCCCCACTC 540
 TGCATACCTT CATCAAAAAC ACTCTCACTA TGCTGCTATG GACGACCTCC AGCTCTCACT 600
 10 TACAAGTGCA GCGACTGGA GGCAGGACTC CTGGGTCCCT GGGAAAGAGG GTACTAGGGG 660
 CCCGATCCA GGATTCTGGG AGGCTTCAGT TACCGCTGGC CGAGCTGAAG AACTGGGTAT 720
 GAGGCTGGGG CGGGCYGGA GGTTGGCCCC CCTGGTGGGA CAACAAAGAG GACACCATTT 780
 15 TTCCAGAGCT GCAGAGAGCA CCTGGTGGGG AGGAAGAAGT GTAACCTACC AGCCTCTGCT 840
 CTTATCTTTG TA 852

20

(2) INFORMATION FOR SEQ ID NO: 205:

25 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1354 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 205:

GATTCCGCAC GAGGCTTGCT GGAGCAGGAG AAGTCTCTRG CCGGCTGGGC ACTGGTGCTG 60
 GCASGARCTG GCATTGGACT CATGGTGCTG CATGCAGAGA TGCTGTGGTT CGGGGGGTGC 120
 35 TCGGCTGTCA ATGCCACTGG GCACCTTTCA GACACACTTT GGCTGATCCC CATCACATTC 180
 CTGACCATCG GCTATGGTGA CGTGGTGCCG GGCACCATGT GGGGCAAGAT CGTYTGCTG 240
 40 TGCACTGGAG TCATGGGTGT CTGCTGCACA GCCCTGCTGG TGGCCGTGGT GGCCCGGAAG 300
 CTGGAGTTTA ACAAGGCAGA GAAGCACGTG CACAATTCA TGATGGATAT CCAGTATACC 360
 AAAGAGATGA AGGAGTCCGC TGCCCGAGTG CTACAAGAAG CCTGGATGTT CTACAAACAT 420
 45 ACTCGCAGGA AGGAGTCTCA TGCTGCCCCG AGGCATCAGC GCAANTGCT GGCCGCCATC 480
 AACGCGTTCC GCCAGGTGCG GCTGAAACAC CGGAAGCTCC GGAACAAGT GAACTCCATG 540
 50 GTGGACATCT CCAAGATGCA CATGATCCTG TATGACCTGC AGCAGAATCT GAGCAGCTCA 600
 CACCGGGCCC TGGAGAAACA GATTGACACG CTGGCGGGGA AGCTGGATGC CCTGACTGAG 660
 CTGCTTAGCA CTGCCCTGGG GCCGAGGCAG CTTCAGAAC CCAGCCAGCA GTCCAAGTAG 720
 55 CTGGACCCAC GAGGAGGAAC CAGGCTACTT TCCCCAGTAC TGAGGTGGTG GACATCGTCT 780
 CTGCCACTCC TGANCCAGC CCTGAACAAA GCACCTCAAG TGCAAGGACC AAAGGGGGCC 840
 60 CTGGCTTGGA GTGGGTGGC TTGCTGATGG CTGCTGGAGG GGACGCTGGC TAAAGTGGGK 900

AGGCCTTGGC CCACCTGAGG CCCCAGGTGG GAACATGGTC ACCCCCACTC TGCATACCCCT 960
 CATCAAAAAC ACTCTCACTA TGCTGCTATG GACGACCTCC AGCTCTCAGT TACAAGTGCA 1020
 - 5 GCGCACTGGA GGCAGGACTC YTGGGTCCCT GGGAAAGAGG GYACTAGGGG CCCGGATCCA 1080
 GGATTCCTGGG AGGCTTCAGT TACCGCTGGC CGAGCTGAAG AACTGGGTAT GAGGCTGGGG 1140
 10 CGGGGCTGGA GGTGGCGCCC CCTGGTGGGA CAACAAAGAG GACACCATTT TTCCAGAGCT 1200
 GCAGAGAGCA CCTGGTGGGG AGGAAGAAGT GTAACCTACC AGCCTCTGCT CTTATCTTTG 1260
 TAATAATGT TAAAGCCAGA AAAAAATAAA AAAAAAAAAA AAAAAACTCG AGGGGGGCC 1320
 15 AGACCCAATC TCCCTATAGT AAGNCGCCNN ANAN 1354

20

(2) INFORMATION FOR SEQ ID NO: 206:

(i) SEQUENCE CHARACTERISTICS:

25

(A) LENGTH: 1378 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 206:

30

TCCCCAGGTG CACAGCCAGG GCCCTCCTGT CTGCAGGAGA ATTCACAGCT GGTGTGGGAC 60

TCAGCCCCTA GNCCATTCAA AGCCTTAATG TTGTAATCAT ATCTTACGTG TTGAAGACCT 120

35

GACTGGAGAA ACAAAATGTG CAATAACGYG AATTTTATCT TAGAGATCTG TGCAGCCTAT 180

TTCTGTACACA AAAGTTATAT TGTCTAATAA GAGAAGTCTT AATGGCCTCT GTGAATAATG 240

40

TAACTCCAGT TACACGGTGA CTTTAAATAG CATACAGTGA TTTGATGAAA GGACGTCAAA 300

CAATGTGGCG ATGTCGTGGA AAGTTATCTT TCCCGCTCTT TGCTGTGGTC ATTGTGTCTT 360

GCAGAAAGGA TGGCCCTGAT GCAGCAGCAG CGCCAGCTGT ANATAAAAAA TAATTACAC 420

45

TATCAGACTA GCAAGGCACT AGAACTGGAA AAGACCACAG AAAACAAAGA ATCCAACCC 480

TTCATCTTAC AGGTGAACAA ACTGTGATGA TGCACATGTA TGTGTTTTGT AAGCTGTGAG 540

50

CACCGTAACA AAATGTAAAT TTGCCATTAT TAGGAAGTGC TGGTGGCAGT GAAGAAGCAC 600

CCAGGCCACT TGACTCCCAG TCTGGTGCCC TGTCTACACC AGACAACACA GGAGCTGGGT 660

CAGATTCCCC TCAGCTGCTT AACAAAGTTC CTCGAACAGA AAGTGCTTAC AAAGCTGCCT 720

55

TCTCGGATAC TGAAAGGTCG AGTTTCTGA ACTGCACTGA TTTTATTGCA GTTGAAAAA 780

AAAAAAGCT ATTCCAAAGA TTTCAAGCTG TTCTGAGACA TCTTCTGATG GCTTTACTTC 840

60

CTGAGAGGCA ATGTTTTTAC TTTATGCATA ATTCAATTGTT GCCAAGGAAT AAAGTGAAGA 900

AACAGCACCT TTTAATATAT AGGTCTCTCT GGAAGAGACC TAAATTAGAA AGAGAAAAC 960
 GTGACAATTT TCATATTTCTC ATTCTTAAAA AACACTAATC TTAAC TAACA AAAGTTCTTT 1020
 5 TGAGAATAAG TTACACACAA TGGCCACAGC AGTTTGTCTT TAATAGTATA GTGCCTATAC 1080
 TCATGTAATC GGT TACTCAC TACTGCCTTT AAAAAAAAA ACCAGCATAT TTATGAAAA 1140
 CATGAGACAG GATTATAGTG CCTTAACCGA TATATTTTGT GACTTAAAA ATACATTTAA 1200
 10 AACTGCTCTT CTGCTCTAGT ACCATGCTTA GTGCAATGA TTATTTCTAT GTACAACTGA 1260
 TGCTTGTTCT TATTTTAATA AATTTATCAG AGTGAAAAA AAAAAAAAAA AAAAAAAAAA 1320
 15 AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAGAA NAAAAANA 1378

20 (2) INFORMATION FOR SEQ ID NO: 207:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1166 base pairs
 (B) TYPE: nucleic acid
 25 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 207:

30 AANCCACTGC ANTTTAAACC CCTCCCCCTC CAAGAAAGTT CACAACCGGC CATGGATGAC 60
 CCTCATTTTA GATGGGCCNC AATATTTAAG ATGGACTGRG GMCCCARAG ACTGACCCTT 120
 GAAAGGGGGA CTCAGAAGAA AGATCCTTGA CATTGCCMAA CATGCTGGGC TTGTCCAACA 180
 35 CAGTGATGCG GCTCATCGAG AARCGGCTT TCCMAGACA AGTACTTTAT GATAGGTGGG 240
 ATGCTGCTGA CCTGTGTGGT CATGTTCTCT GTGGTGCAGT ACCTGACATG AGCCAGCCAC 300
 40 GCTCAGTGGC TGAACAGCAT TCCCACAGCC TGCAAGTGTG TGTGTGTGTG AAAGAGAGAG 360
 GGGGCCCAGA GGCCGCCTTT TGAAATGTTT GCCTGTCTGA ACTGTGAAGA CACTTGGGAG 420
 TGATTGTGGT CTAATTTCCA ACCTGCTCTG TTTTCTGTGA CATCTTGGAG GGGGAGCTAG 480
 45 TGCCAMCACC ATGCGCGGTG CTTAGGAAAT GAAAGAAGTC CCGGTCTGT CTCTCTCACT 540
 CTCGCTCTCA MTGGGGGAGG GAAAGAATGG CTTTGGTGGC TTTGTTTACA CAGCTGATGC 600
 50 GTGSCCTGGG AAGGTGTCCA CAGTGAGCCC TGTGTGCAGG ACTGTCCACN ACGGTTTACA 660
 CCTTGTACC ATCAGGCCTT TCTGGCTCCT GATAGGTGG AGCAAAAGTG GAAAGGAAAG 720
 GAAAGAGGCY TTTTCTTACA GCCATTATAT TAAATAGTAG GTCGATTCAC ATCTCGTGC 780
 55 TCCTGGCCAC CCTCCCCTGT GCCTCAGTGA CATGTAGATG ACTGACTGCC AATACTGTGC 840
 ACCATTCCCT GGAAGCAGCT ACCTAGGGGA AACAAGATGT AGTGCTATTG CCGATAACAA 900
 60 GTAAGATTTT CCACACTACA GCTGGGTGTT TCTCTTTTCT AAAGTGAGGC CAGTGTATT 960

TCCCGGGAGT GTTCAGTCTT GACCCTAGTC ACTGATTTT TCTAGTTGTT AATAGAGTGG 1020
 TTGGGCTTTT AAGGTTTCAGA GACTGTGGGC TTGGGCACCT GCGCCCAGGG STTTTGTGGG 1080
 -5 GGCCTTTGCC CCTTAGRAAA GTAGCTTTTA GGGGCAAAGA TTGTGTGATT TTCCCCATTA 1140
 CAGTCTTCAG CTCNAGGGTT TTAAAA 1166

10

(2) INFORMATION FOR SEQ ID NO: 208:

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(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 697 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

20

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 208:

TACTTCTAGG ATTATAAGGA ATTAACATTG AGATGACATT TCCATTTGAG AAGGAAAATA 60
 25 GTTGCTTTCA GTGCCTTTTA TTGATTCTT GGAGAGAGCA GACTCGCACS AACATTCAAC 120
 CCCAGCGCTG ATATGACAGT AATCCTCAGA GGCAGAGCCC AGCACAAAAC AGCAATGCTA 180
 GAAAGTTACA ATTGGAAAGT TTCTTGCCAG CTTCGGGAAT GACACTGCAA AGCTGATGCC 240
 30 AGAAACTGCC AGRGTAATTC TCCTCATTAC TGCTCTACCC ACCCACTTTC AGCTCCCCAA 300
 ATTAAGTAGT GCAGTTGACT AATTCCTTTT ACCTTTATCA TTTARGGTGA RGCATTGCAC 360
 35 AAAAAGTCTC GACTTTGCCA TATAAGGGCT GTGGTTCTCT GTGGTCCCCT GGATAAGAGG 420
 CATCACCATT ATCTGGAAAC ATGCAGTAAA TGCAGATTNT TCATCTTCTC CCCAGACCTC 480
 CTGAGTTAGA AATTCACAAG TTCTCCAGGT GATCTCATAC ATGCTAAAGT TTGAGAACCA 540
 40 TTGAGTAAAG TTAATGCATT AAGAAGAGAT TAGATAGGGA TGGTGGCGTA TCTTCCTACA 600
 GTTTCCTGT TAACAAGAAA GTCAGAGGTC AGTTGATCAG ACATTAGATT ATTTATGCT 660
 45 AAAACTAAAA AAAATTAAAA AAAACTGGAG GGGGGCC 697

50

(2) INFORMATION FOR SEQ ID NO: 209:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 932 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 209:

60 CGTGAGTCAC CTCTCTATAG TGGCGGTGGC CGAGGCCGGG GTGACCCTGC CGAAGCCTCC 60

	GCTGCCAGAA ACCATGTTCA AGGTAATTAA AAGGTCCGTG GGGCCAGCCA GCCTGAGCTT	120
- 5	GCTCACCTTC AAAGTCTATG CAGCACCAAA AAAGGACTCA CCTCCCAAAA ATTCCGTGAA	180
	GGTTGATGAG CTTTCACTCT ACTCAGTTCC TGAGGGTCAA TCGAAGTATG TGGAGGAGGC	240
	AAGGAGCCAG CTTGAAGAAA GCATCTCACA GCTCCGACAC TATTGCGAGC CATAACAAC	300
10	CTGGTGTCAG GAAACGTA CTCCAACTAA GCCCAAGATG CAAAGTTTGG TTCAATGGGG	360
	GTTAGACAGC TATGACTATC TCCAAAATGC ACCTCCTGGA TTTTTCCTCGA GACTTGGTGT	420
15	TATTGGTTTT GCTGGCCTTA TTGGACTCCT TTTGGCTAGA GGTTCAAAAA TAAAGAAGCT	480
	AGTGATCCG CCTGGTTTCA TGGGATTAGC TGCCTCCCTC TATTATCCAC AACAAGCCAT	540
	CGTGTTTGCC CAGGTCAGTG GGGAGAGATT ATATGACTGG GGTTCACGAG GATATATAGT	600
20	CATAGAAGAT TTGTGGAAGG AGAACTTTCA AAAGCCAGGA AATGTGAAGA ATTACCTGG	660
	AACTAAGTAG AAAACTYCAT GYTCTGCCAT CTTAATCAGT TATRGGTAAA CATTGGAAC	720
25	TCCATAGAAT AAATCAGTAT TTCTACAGAA AAATGGCATA GAAGTCAGTA TTGAATGTAT	780
	TAAATGGCT TTCTTCTTCA GGAAAACTA GACCAGACCT CTGTTATCTT CTGTGAAATC	840
	ATCTACAAG CAACTAACC TGGAACTCCT TCACCTAGAG ATAATGTACA AGCCTTAGAA	900
30	CTCTCATTC TCATGTTGCT ATTTATGTAC CT	932

35 (2) INFORMATION FOR SEQ ID NO: 210:

(i) SEQUENCE CHARACTERISTICS:

- 40 (A) LENGTH: 661 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 210:

45	GTCATTCTTT AAATAAAAGC TTTCCTGTTT AAAGCTTTTC AAAGGAGCAG ACCACCTTGA	60
	AGATTCCCCC TAGGGTTGAT ATGTGTCTAA TTCATTTTAT AAAAATTATT CTGTCTTCA	120
50	TTTTAAAGCT TTGGCTATAT AGTCAGAAAT GTCCTAAATA ACAAACTATT TTGTATTTAA	180
	TTTAGGGAAG ACTAAAGGA AGAAAAATGA AAATCAGTC TTTATGTAAG CTCCAAGGAT	240
	ATTAGGGCTT AAAGGGCTTT TCTAGTTTGA TGAGAAATTTG TACTACTGAT TTTTATATAT	300
55	TCCTGTTTTT GAGATGAACA GATCTCTGGG GAAATGTTG AGTTACAATG GCATTTCACT	360
	GTGATCCCTC TCAAGCTCAG ATCAGTTCTA TAACCAATG ACAACCTGTC TCTTTGGTTT	420
60	ACTGTCCTGT GAAATGTCAG CTCAAGTTTC CCAGAAGTCG TGTGTTTATG ATGAGTCAGA	480

GTGCTTTTCC TCGGTGGGAC AGTTGCTGGC CCTCTTAATT TTGGTGTATG TGCTTCCAAG 540
TATCTAAACC TCCAGTCTGA TCTGTATATG CTATCCTAAC TGTAAATTGT ATTATTGATT 600
-5 ATGTTGATTA TCTTGCTTGA AGGTTTCATAC TTTTCAATTT GATAGAAATA AAGTTTMTTT 660
C 661

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(2) INFORMATION FOR SEQ ID NO: 211:

(i) SEQUENCE CHARACTERISTICS:
15 (A) LENGTH: 592 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 211:

GAAACTGACA TTGTTAAACA CACTAAAACA GAAGTACTTA CCTCTTGAAG ATTTAATATA 60
TAATGGTTGA CATGATACAT GTACATGAAT GGAATGACCA GATGCTTATG GTCTACATTT 120
25 TCCTTTATCC TGTTAGTATT ACCTTCCTTA ATCTTTGTTC CTTAACATGC TAAATTCCTC 180
TTCAGTGTMT ATTTTCTAGT GACAGAATGC TAACATTTCT TACACCCTGG CAGAAGGGAG 240
30 AGAAATGTGT TTTGGGGTGG GTAACATAAT TTTTGAGTGA AATATCATAA GATGAGAATG 300
GAAAGAGGGA GACACAAAGA GTTATAACAA AAAACAATG GTTTTTTTAG CCATTTGACT 360
GGCTCTTTAA ATAGTCTACA AGACATTCAC GTTNAACATC ACTTTTAGTG AAATAAAATG 420
35 TGCCATACTA GTATGTGCTT CAAAAGGGCA AATGTGCTTT AGTGGCCCTAA GGCTAAATTT 480
TGGTCATTTG ACATCAGAGA TGTGTAAAGT ATTGCACTTA ATACGCACCT ATTTCTCAAT 540
40 AGTGNATTTT TTTTGGCTAG CATTTNCTTT ACCACTAACC TTGTTGGATA GC 592

45 (2) INFORMATION FOR SEQ ID NO: 212:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 938 base pairs
50 (B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 212:

55 TGGAGTGGCT TTCCAGCTGA ATGAATCCTA TGTCTCGCGT GCAGGTGGTT GGTTTTCAAT 60
GTTCTTSCTA ATTTTTTTC TATTGGCTCT TGGGAGTTT CTTTGTTC TCCTGTGTTT 120
GCCAGCTTT AATAAAACCA GGCGCAAACA AAAACCATAG CATTCTGAAA CAATAGGGGG 180
60

CCCACATTGG ACCCAGTATG TCACTTTAAT GGACTTCAAG AAAAAATCTG AATGGGAAAA 240
 TGACACTAGG AATGTATACT CCACACATTT TATGCCATAT AATGGTGTGT TTTCTTAATT 300
 5 TTGTTTCTTG TGGCGAAATG TGGCTTTCAA ATTAAAATGM CCTTTCTTTC TTKGAAACTT 360
 TTTGTTTKGA CTGTGTATAAT TAAGGGTTTG GAAAGATTCA TAATTMTGAG AGAGGTTTGC 420
 10 AACCAGGAGA TACAAAGAAG TCTCAGTAGT AATCTTGTTC ATGTGCTTTT ACAGCCAGCT 480
 ACATTTAAGR ATGTATTAGT TACAGAAATT ATATGTCTGT GTATGTGTCT CTAACAATA 540
 AAGTACATGC CTCCACATAA TGCGGTGCTG TCCATCTCGG CAAATACTGG CCAAGTCCCT 600
 15 TTATGACAGG CACACAGAAA CCATAGCATG GTCTGGCTTT CAGAAAATGC CTCTCATCTT 660
 TCCTGGAACC TTATTTTGCT AAATGTCTGT TTTCTGTGA TTTGTGTAC CTCACAGCAC 720
 CATGTGACC ATGGTGATGC CTCATTTGCA TGATATGTAC CTGTGTGTTA ATGTGAAATA 780
 20 CATTTTCATT GAAGAGTCTG ATGACTTGCT AGCGTTTAT TTTTCTGTGA AGCTCAATGT 840
 GCTGAAACCA AACCAGGCTT TTA AAAACCT GTGTAGAAGA AAACCAAAAA ATCCTGTGTG 900
 25 GGTGTCCTTT CCTGTCAAA CTCATTAAAA ATTCCCTT 938

30 (2) INFORMATION FOR SEQ ID NO: 213:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1079 base pairs
 (B) TYPE: nucleic acid
 35 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 213:

40 AGCCTGCCGG GAGAGTGGTG GCATCTRARA GGCTGGTCGT GGACTGTGGT TGGGGGAGGT 60
 GGGAGCTGTT TTAACCGTGT GCCCCCTCTC CTGTGCKGC GTGGGCATCC CCCGGGCAG 120
 TGGAACGCGG GCGCTCCTCC AGCTTCCGAG TCCAGCCAGC CTGGGCGCGG GCGCGCCCC 180
 45 CGAGACACCC GAGGAGTCCG TTCTCCCTG GTTACGTGGA CTGTGGAGCT GGTCTCTTGT 240
 GGCTCAGCGC CGTGCGGAGG TTGAAGCGTA CCTGCGGAGG TCGCACCAGG GCGGTGAGGA 300
 50 GGAGGAGGAA GGCATGAGC CGAGCTTGAG GAATCCGTGY TCCAAACTCT AACTCAAGG 360
 RTGCMCTGCG CAACTCTGGT GCGATGGGC TGGGGCAGAT GTCTTGGAG TTCTACCAGA 420
 AGAAGAAGTC TCGCTGGCCA TTCTCAGACG AGTGCAATCC ATGGGAAGTG TGGACGGTCA 480
 55 AGGTGCATGT GTAGCCCTG GCCACGGAGC AGGAGCGGCA GATCTGCCGG GAGAAGGTGG 540
 GTGAGAACT CTGCGAGAAG ATCATCAACA TCGTGGAGGT GATGAATCGG CATGAGTACT 600
 60 TGCCCAAGAT GCCCACACAG TCGGAGGTGG ATAACGTGTT TGACACAGGC TTGCGGGACG 660

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TGCAGCCCTA CCTGTACAAG ATCTCCTTCC AGATCACTGA TGCCTTGGGC ACCTCAGTCA	720
CCACCACCAT GCGCAGGCTC ATCAAAGACA CCCTTGCCCT CTGAGCGTCG CTGGATCTCT	780
GGGAGCTCCT TGATGGCTCC CAGACCTTGG CTTTGGGAA TTGCACTTTT GGGCCTTTGG	840
GCTCTGGAAC CTGCTCTGGG TCATTGGTGA GACTTGGAAG GGGCAGCCCC CGCTGGCTTC	900
TTGGTTTTGT GGTGCCAGC CTCAGGTCAT CCTTTTAATC TTTGCTGACG GTTCAGTCTT	960
GCCTCTACTG TCTCTCCATA GCCCTGGTGG GTCCCCCTT CTTTCTCCAC TGTACAGAAG	1020
AGCCACCACT GGGATGGGGA ATAAAGTTGA GAACATGAGT TTGGGCTGAA AAAAAAAAAA	1079

20
 (2) INFORMATION FOR SEQ ID NO: 214:

25
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 3791 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 214:

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TGAAGCAGGC GCTCTTGGCT CGGCGCGGCC CGCTGCAATC CGTGGAGGAA CGCGCCGCCG	60
AGCCACCATC ATGCTTGGGC ACTTACAGGA AGGCTTCGGC TGCCTGGTCA CCAACCGATT	120
CGACCAGTTA TTTGACGACG AATCGGACCC CTTCGAGGTG CTGAAGGCAG CAGAGAACAA	180
GAAAAAGAA GCCGCGGGG GCGCGCTTGG GGGCCCTGGG GCCAAGAGCG CATCAGGGCC	240
GCGGCCAGA CCAACTCCAA CGCGCAGGC AAACAGCTGC GCAAGGAGTC CCAGAAAGAC	300
CGCAAGAACC CGCTGCCCCC CAGCGTTGGC GTGGTTGACA AGAAAGAGGA GACGCAGCCG	360
CCCGTGGCGC TTTAAGAAAG AAGGAATAAG ACGAGTTGGA AGAAGACCTG ATCAACAACT	420
TCAGGGTGAA GGGAAAATAA TTGATAGAAG ACCAGAAAGG CGACCACCTC GTGAACGAAG	480
ATTTCGAAAAG CCACTTGAAG AAAAGGGTGA AGGAGGCGAA TTTTCAGTTG ATAGACCGAT	540
TATTGACCGA CCTATTGAG GTCGTGGTGG TCTTGGAAGA GGTGAGGGG GCCGTGGACG	600
TGGAATGGGC CGAGGAGATG GATTGTATTC TCGTGGCAAA CGTGAATTG ATAGGCATAG	660
TGGAAGTGAT AGATCTTCTT TTTACATTA CAGTGGCCTG AAGCACGAGG ACAAACGTGG	720
AGGTAGCGGA TCTCACAAC TGGGAACTGT CAAAGACGAA TTAAC TACT TGGATCAATC	780
AAATGTGACT GAGGAAACAC CTGAAGGTGA AGAACATCAT CCAAGTGGCAG AACTGAAAA	840
TAAGGAGAAT GAAGTTGAAG AGGTAAAAGA GGAGGGTCCA AAAGAGATGA CTTTGGATGA	900
GTGGAAGGCT ATTCAAAATA AGGACCGGGC AAAACTAGAA TTTAATATCC GAAAACCAA	960

	TGAAGGTGCT GATGGGCAGT GGAAGAAGGG ATTTGTTCCT CATAAATCAA AGAGTGAAGA	1020
	GGCTCATGCT GAAGATTCGG TTATGGACCA TCATTTCCGG AAGCCAGCAA ATGATATAAC	1080
5	GTCTCAGCTG GAGATCAATT TTGGAGACCT TGGCCGCCCA GGACGTGGCG GCAGGGGAGG	1140
	ACGAGGTGGA CGTGGGCGTG GTGGGCGCCC AAACCGTGGC AGCAGGACCG ACAAGTCAAG	1200
10	TGCTTCTGCT CCTGATGTGG ATGACCAGA GGCATTCCCA GCTCTGGCTT AACTGGATGC	1260
	CATAAGACAA CCCTGGTTCC TTGTGAACC CTCTGTTC AAGCTTTTGC ATGCTTAAGG	1320
	ATTCCAAACG ACTAAGAAAT TAAAAAATAA AAGACTGTCA TTCATACCAT TCACACCTAA	1380
15	AGACTGAATT TTATCTGTTT TAAAAATGAA CTCTCCCGC TACACAGAAG TAACAAATAT	1440
	GGTAGTCAGT TTGTATTTA GAAATGTATT GGTAGCAGGG ATGTTTTCAT AATTTTCAGA	1500
20	GATTATGCAT TCTTCATGAA TACTTTGTGA TTGCTGCTTG CAAATATGCA TTTCCAAACT	1560
	TGAAATATAG GTGTGAACAG TGTGTACCAG TTAAAGCTT TCACTTCATT TGTGTTTTTT	1620
	AATTAAGGAT TTAGAAGTTC CCCAATTAC AAACCTGGTT TAAATATTGG ACATACTGGT	1680
25	TTAATACCT GCTTTCATA TTCACACATG GTCAACTGGG ACATGTTAAA CTTTGATTTG	1740
	TCAAATTTTA TGCTGTGTGG AATACTAACT ATATGTATTT TAACCTAGTT TTAATATTTT	1800
30	CATTTTGGG GAAAAATCTT TTTTCACTTC TCATGATAGC TGTTATATAT ATATGCTAAA	1860
	TCTTTATATA CAGAAATATC AGTACTTGAA CAAATTCAAA GCACATTTGG TTTATTAACC	1920
	CTTGCTCCTT GCATGGCTCA TTAGGTTCOA ATTATAACTG ATTTACATTT TCAGCTATAT	1980
35	TTACTTTTAA AATGCTTGAG TTTCCCATTT TAAATCTAA ACTAGACATC TTAATTGGTG	2040
	AAAGTGTGTT AAACACTTA TTGTTGGTAG GCACATCGTG TCAAGTGAAG TAGTTTATA	2100
40	GGTATGGGTT TTTTCTCCCC CTTACCAGG GTGGGTGGAA TAAGTTGATT TGGCCAATGT	2160
	GTAATATTTA AACTGTCTTG TAAATAAGT GTCTGGCCAT TTGGTATGAT TTCTGTGTGT	2220
	GAAAGGTCCC AAAATCAAAA TGGTACATCC ATAATCAGCC ACCATTTAAC CTTTCCTTGT	2280
45	TCTAAAACAA AAACCAAAGG GCGCTGGTTG GTAGGGTGAG GTGGGGGAGT ATTTTAATTT	2340
	TTGGAATTTG GGAAGCAGAC AGCTTTACTT TGTAAGGTTG GAACAGCAGC ACTATACATG	2400
50	AAATATAAAC CAAAAACCTT TACTGTTTCT AAATTTCTTA GATTGCTATT ATTTGGTTGT	2460
	AAGTTGAGTA TTCCACAGAA AGTGGTAATT ATCTCTTCTC TCTTCCTCCA TTAGAAAATT	2520
	AGGTAAATAA TGGATTCCTA TAATGGGAGC ATCACCATT ATTAACACAC ACATAGAATG	2580
55	ATGAATTAAA AAAGTTTCT AGGATTGTCT TTAATCTGTC CACATTTATT GATAAACAGT	2640
	GAAGGAATTT TTAATAAATT TTAAAGAATT GTTTGTACAG TCATTTTAG AAATGTTCTA	2700
60	CCTGTATATG GTAATGTCCA GTTTTAAAAA TATTGGACAT CTTCAATCTT AAACATTTCT	2760

	ATTTAGCTGA TTGGTTCTCA CATATACTTC TAAAAGAAAC TTTTATGTTA TAAGAGTTAC	2820
	TTTTTGGATA AGATTTATTA ATCTCAGTTA CCTACTATTC TGACATTTTA GGAAGGAGGT	2880
- 5	AATTGTTTTT AATGATGGAT AAACCTGTGC TGGTGTTTTG GATCTTATGA TGCTGAGCAT	2940
	GTTCGCACT GGTGCTAATG TCTAATATAA TTTTATATTT ACACACATAC GTGCTACCCA	3000
10	GAGATTAATT TAGTCCATAT GAACTATTGA CCCATTGTTC ATTGAGACAG CAACATACGC	3060
	ACTCCTAAAT CAGTGTGTTT AGACTTTTCA AGTATCTAAC TCATTTCCTAA ACATGTACCA	3120
	TGTTTTATAA ACCTCTTGAT TTCCAGCAAC ATACTATAGA AAACACCTGC TACTCAAAAC	3180
15	ACAACTTCTC AGTGTCAATC ATTGCTGTGC TGAGAGACAA CATAGCAATA TCTGGTATGT	3240
	TGCAAGCTTT CAAGATAGCC TGAACCTAAA AAGTTGGTGC ATTAGTTGTA TCTGATGGAT	3300
	ATAAATTTGC CTCCTAGTTC ACTTTGTGTC AAGAGCTAAA ACTGTGAACC TAACTTTCTC	3360
20	TTATMGGTGG GTAATAACTG AAAATAAAGA TTTATTTTCA TGCTCACTTC TTAAAAGTCA	3420
	TAAAAACAAT CAAATAGGRT CATGTTTATTT GTCATGTGTT TCCTGGKTTT TGACCTGTGT	3480
25	GCACACCCCT GTGTGTTTAT AATTTTTTAAA TTGAATTTTA TATGGGGTTT TTATTTGCTA	3540
	AAAACCAGGC TGTGAATCA CATTTGGGAA GGGTACTTAT CTTAATGACT AATGACTTAA	3600
30	TTGGGAAAGT TGAATTCTTG TAAAATACAA AATCCAAGGA CTTCTTGGGA TTTAATCTAA	3660
	TTGTCACTTC NTTAGGCAGA TNCACCTTTT TGGATAATGG AAAGTTAAGC ATACCGAATG	3720
	CTACTTTTGG TTGACAAACG GGCCTAATAG TCCGGGGGGA AATCCCTAAC NGGTAAGGNT	3780
35	CCCAAGTATG G	3791

40 (2) INFORMATION FOR SEQ ID NO: 215:

(i) SEQUENCE CHARACTERISTICS:

- 45 (A) LENGTH: 1334 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 215:

50	CAGTGCTCGC TCCTGCTCGG GCGCTGCGG CCCCGGGCGT CGCCATGACC AGTGAGCTGG	60
	ACATCTTCGT GGGGAACAGA CCCTTATCGA CGAGGACGTG TATCGCCTCT GGCTCGATGG	120
	TTACTCGGTG ACCGACGCGG TGGCCCTGCG GGTGCGCTCG GGAATCCTGG AGCAGACTGG	180
55	CGCCACGGCA GCGGTGCTNC AGAGCGACAC CATGGACCAT TACCGCACCT TCCACATGCT	240
	CGAGCGGCTG CTGCATGCGC CGCCCAAGCT ACTGCACCAG YTCATCTTCC AGATTCCGCC	300
60	CTCCCGGCAG GCACTACTCA TCGAGAGGTA CTATGCCTTT RATGAGGCCT TTGTTCCGGA	360

	GGTGCTGGGC AAGAAGCTGT CCAAAGGCAC CAAGAAAGAC CTGGATGACA TCAGCACCAA	420
	AACAGGCATC ACCCTCAAGA GCTGCCGGAG ACAGTTTGAC AACTTTAAAC GGGTCTTCAA	480
-5	GGTGGTAGAG GAAATGCGGG GCTCCCTGGT GGACAATATT CAGCAACACT TCCTCCTCTC	540
	TGACCGGTTG GCCAGGGACT ATGCAGCCAT CGTCTTCTTT GCTAACAACC GCTTTGAGAC	600
10	AGGGAAGAAA AACTGCAGT ATCTGAGCTT CGGTGACTTT GCCTTCTGCG CTGAGCTCAT	660
	GATCCAAAAC TGGACCCTTG GAGCCGTCGA CTCACAGATG GATGACATGG ACATGGACTT	720
	AGACAAGGAA TTTCTCCAGG ACTTGAAGGA GCTCAAGGTG CTAGTGGCTG ACAAGGACCT	780
15	TCTGGACCTG CACAAGAGCC TGGTGTGCAC TGCTCTCCGG GGAAAGCTGG GCGTCTTCTC	840
	TGAGATGGAA GCCAACTTCA AGAACCTGTC CCGGGGGCTG GTGAACGTGG CCGCCAAGCT	900
20	GACCCACAAT AAAGATGTCA GAGACCTGTT TGTGGACCTC GTGGAGAAGT TTGTGGAACC	960
	CTGCCGCTCC GACCACTGGC CACTCAGCGA CGTGCGGTTT TTCCTGAATC AGTATTCAGC	1020
	GTCTGTCCAC TCCCTCGATG GCTTCCGACA CCAGGCCTCT GGGACCGCTA CATGGGCACC	1080
25	CTCCGCGGCT GCCTCCTGCG CCTGTATCAT GACTGAGGTG CCTCCCAACG CTCCGCCAC	1140
	GCTGACAATA AAGTTGCTCT GAGTTTGAG ACTGGTCTC GCTCCGGGGA GCAAGTGGG	1200
30	GGCGTGCAGA TGTGCCGTGT TCTGTCTCTG AGCACCTGGT GTCCGTGTAC AAGGATGGAT	1260
	GTGTNCNGTG GTCCTTGGG AACTGAGACA TATCTCAGGG AATGGTGTCT GTGCTCAGCC	1320
35	CATCCACCAG AAGA	1334

40 (2) INFORMATION FOR SEQ ID NO: 216:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1511 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 216:

50	GTGGCGGGGA TGCTGCGAGG GGTCTCCTG CCCAGGCGG GCCGGCTGCC TACCCTCCAG	60
	ACTGTCCGCT ATGGCTCCAA GGCTGTTACC CGCCACCGTC GTGTGATGCA CTTCAGCGG	120
	CAGAAGCTGA TGCTGTGAC TGAATATATC CCCCCGAAAC CAGCCATCCA CCCATCATGC	180
55	CTGCCATCTC CTCCAGCCC CCCACAGGAG GAGATAGGCC TCATCAGGCT TCTCCGCGG	240
	GAGATAGCAG CAGTTTTCCTA GGACAACCGA ATGATAGCCG TCTGCCAGAA TGTGGCTCTG	300
60	AGTGCAGAGG ACAAGCTTCT TATGCGACAC CAGCTGCGGA AACACAAGAT CCTGATGAAG	360

	RTCTTCCCCA ACCAGGTCCT GAAGCCCTTC CTGGAGGATT CCAAGTACCA AAATCTGCTG	420
	CCCCTTTTTG TGGGGCACAA CATGCTGCTG GTCAGTGAAG AGCCCAAGGT CAAGGAGATG	480
-5	GTACGGATCT TAAGGACTGT GCCATTCTG CCGCTGCTAG GTGGCTGCAT TGATGACACC	540
	ATCCTCAGCA GGCAGGGCTT TATCAACTAC TCCAAGCTCC CCAGCCTGCC CCTGGTGCAG	600
10	GGGGAGCTTG TAGGAGGCCT CACCTGCCTC ACAGCCCAGA CCCACTCCCT GCTCCAGCAC	660
	CAGCCCCCTC AGCTGACCAC CCTGTTGGAC CAGTACATCA GAGAGCAACG CGAGAAGGAT	720
	TCTGTCATGT CGGCCAATGG GAAGCCAGAT CCTGACACTG TTCGGACTC GTAGCCAGCC	780
15	TGTTTAGCCA GCCCTGCCGA TAAATACACT CTGCGTTATT GGCTGTGCTC TCCTCAATGG	840
	GACATGTGGA AGAACTTGGG GTCGGGGAGT GTGTTTGTC CTTGGTMTTC ACTAGTAATG	900
	ATATTGTGAG GTATAGGGCC ACTTGGAGAT GCAGAGGATT CCATTTTCTG TGTGAGTAC	960
20	CGGCTTCGTC CTTAGTMTTC CCAACTTGGG ACGTGATAGG AGCAAAGTCT CTCCATCTC	1020
	CAGGTCCAAG GCAGAGATCC TGAAAAGATA GGGCTATTGT CCCCTGCCCT CTTGGTCACT	1080
25	GCCTCTTGCT GCACGGGCTC CTGAGCCACC CCCTTGGGGC ACAACCTGCC ACTGCCACAG	1140
	TAGCTCAACC AAGCAGTTGT GCTGAGAATG GCACCTGGTG AGAGCCTGCT GTGTGCCAGG	1200
	CTTGTGCTG AGTGCTGTAC ATGTATTAGT TCCTTTACTG CTGACCACAT TGTACCCATT	1260
30	TCACAGAGAA GGAGCAGAGA AATTAAGTGG CTTGCTCAAG GTCATGCAGT TAGTAAGTGG	1320
	CAGAACAGGG ACTTGAACCA AGCCCTCTGC TCTGAAGACC GCGTCTGAA TTTCTTCACT	1380
35	AGAGCTTCCT CATCAGGTTA CCCAGAAGTG GGTCCCATCC ACCATCCAGG TGTGCTTGGG	1440
	TGTTAGTTCT CCACCCCTGA GGTGTACGCT GTGAAAAGTT TGGGAGCACT GCTTTATAAT	1500
40	AAAATGAAAT A	1511

45 (2) INFORMATION FOR SEQ ID NO: 217:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 642 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 217:

55	AGGCCTTACT TTTCCTCCCA CAAAGGAGTC GCAGCCACGC TAGCTCTGAC TTGCCACTGT	60
	GACAAAGTTC ACGTAGCAGG TCTAGGCAAA GACTGGGCAA TTGAGCAGAG GAGACGGACC	120
	TGTGAGTCTG ACCRYGAGSC GGRCCCTTC ACCTTGGCTG GGCTGGTCCT GGTCTTAGG	180
60	TTTGTGTCAG TTGTCTTGT TTGGATCCCT CAACTAGGTG ATAAGCACTG GAGGGGGATG	240

ACCCGCCTTG GACGTGTTTC TTAAACCTCA TCCATATAAT AGGGCCGTGG GATGGTTGTA 300
 5 GAGGTAAAGC AGGATGATGG TGTTTTAAGA CCAGAGCTTG GGACCAGGGC TCCTACACCT 360
 AATTTTCTCT CCTGGTAGCT GAACAAAGGT CTAAATTAGC TTAACAAAAG AACAGGCTGC 420
 CGTCAGCCAG AGTTCTGAAG GCCATGCTTT CAGTTTCCCT TGTTGACAAT TGCTCTCCAG 480
 10 TTCTATGAA AGCACAGAGC CTTAGGGGGC CTGGCCACAG AACACAACCA TCTTAGGCCT 540
 GAGCTGTGAA CAGCAGGGGG TTGTGTGTCT GTTCTGTTTC TCTGCTGCC GAACTTTCTC 600
 AATAAACCTT ATTTCTTATT TTATATTAC GTNGGTGCTG GG 642
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20 (2) INFORMATION FOR SEQ ID NO: 218:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1241 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 218:

30 GGTCCCCTG TTCCATTITA TGCTAATAGA TTCCATTCTA GGGCCCAGCC GTCTCTTGAC 60
 TGATGGTGTT CCCTTTAACC CTTGGCATGT ATAATAGAAT TTTGGTGAAT GAAAGAACCC 120
 AAATAGGCCA GATAGTCCCC CCAGGCCCTG ATATCCATAA AAGGCTTGGG AATGCATTAT 180
 35 GTAATTGTCC TTAGTCTTTT TGTTGTTTTA GAAAAAACA ACAAGATGGG CTCAGATGGA 240
 TGCCTACGTA AAAATGGTTC CTAGCTGTGT ACTCATAACT TTTCTTTGAA TTGAGTAGTG 300
 AAAGGAAGGA GGAGGAAAGG AAATTAAATG TCCTTCTAGT ATTCTCTGGA CTCAAGTCTG 360
 40 ACATATGRGA TAATAACCTA TATTGAAATG CCAAGAATTG TATCTGAAAC AAGRGACAG 420
 TTTGACACAT TTATCATGCC TTCATATTAC ATATTAACTG AAACCAATTA ATAAACATAT 480
 45 GAAATATCCA TTGCACAAGG CAAAGGCACC TAAACCTTTT GTTCTTTTTT CTACATAGCA 540
 GAAATTGATT TTTTTTTTAT TTTTTTAGGG GAACCTATAT AATTATGACC CAGTGATGTC 600
 TTTTGGTGAC TTAAGCTTAT GAATTCAGGT TACAATTGAG TTGATTCTAG ATGGTTACTA 660
 50 CCTTGAAAAG GATGTTGGTG CCTTATGTGA CACGAGCCAG AGCCTGCTGG GAATAAACA 720
 AGCAGATTCA TGCCAACACC AACTCGTAGC TTTAGTGGCA GATGGGAGTG GTCACAGACT 780
 55 CCCAAATGT GGGGCTTTGG ATTTCCACAC CATCCACGT GTGTGTCATC TTCTCTTTTC 840
 ACACTCTTGA TGATAATTG AAAATGRTGA AATCACCTCT GAATTTGCCT ATAGCATGAG 900
 CACATTCTTA TGACAACATA ACAAATAGTT CATAATGTGA ATATTAGAAA CTGTTACAGC 960
 60

CTGCAGTTAC CATAATTTTC CATGTTGTG GAATTGATAT TGAAATAGCA GGGCTAAGGA 1020
 ATTACTGGCA AGTTTTAGCC TGTGGTAAT ACCTTAGGGT TATTTAAATA TTTGTAATTT 1080
 - 5 TATTTAAATG TTCATGAATG TTTGAAAGGA ACAAATTAT CAGGGATGGC TCTTTGCCAT 1140
 GGGTCTTATT TTCACCTCT TTTCTGTAAG AAAAAAGAAC AATGTCTTAA TGTATTTTTA 1200
 AAGTTTTTGG TATAGTTTCT AATTCCAATT TTAATAAAG T 1241
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(2) INFORMATION FOR SEQ ID NO: 219:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1080 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

20

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 219:

25 TGTTFATGTG ACCTAAAACA TACACACATG CACACACACA TACATATCCA TTCATTTCATT 60
 CATTCAGTGT GTGTTTCCAG TGTCTGTGTG TCACGTGTTA TGCAGTTTCC ATTTCCCACT 120
 GAATTATGAG TGGAGGGCAA CTTTCTAAC CAGATTGTCT TTTCAGAACA AAGACCKGGG 180
 30 RATTGAGGAA GAGTTTGGAA AGAGGGAGAG GCAAGGAAAG AGAGCTTTAA ATTGAAAGGT 240
 TAATTTCTTA AGAGGAACCT GGGCTGAATG ACTACAGTGT TATACCTCC AATCTTTGCA 300
 GGTGGGCATG GAACACTGCT TGTATCACTC TGTGCACGGT ATAAATCCAT ATATCCACAA 360
 35 AAACACACAT CCATCCATCA ACATATACAT GGTTTGGGAT GAGCAGGTCA ATAGTTTGA 420
 GAGGGAGTTT GTTCCTTTTT TTTTCTCAT TACTCTTAA ATTGTTGTCA GTTATCAAAC 480
 40 AAACAAACAG AAAAATTGTT TGGGAAAAAC CTTCATACG CCTTTTCTAT CMAGTGCTTT 540
 AAAATATAGA CTAATACAC ACATCCTGCC AGTTTTTCT TACAGTGACA GTATCCTTAC 600
 CTGCCATTTA ATATTAGCCT CGTATTTTTC TCACGTATAT TTACCTGTGA CTTGTATTTG 660
 45 TTATTTAAAC AGGAAAAAAA ACATTCAAAA AAAGAAAAAT TAACTGTAGC GCTTCATTAT 720
 ACTATTATAT TATTATTATT ATTGTGACAT TTTGGAATAC TGTGAAGTTT TATCTCTTGC 780
 50 ATATACTTTA TACGAAGTA TTACGCCTTA AAAATACGAA AATAAATTTT ACAAGGTTTC 840
 TGTTTTGTGT GGAAGAGTAA TTGATGTTGC TAAGAATGAT GTTTGTTTTT TTGGGGTTTT 900
 TGTGTTTTTT TTTTAAATG TTACCAGCAC TTTTMTGTA AGTTTCAC TTCCGAGGTAT 960
 55 TGTACAAGTT CACACTGTTT GTGAAGTTTG AATATGAAGG AATAATTAAA AAAAAAAAAA 1020
 AAACNCGGG GGGGGCCCGG TCCCATTTGN CCCAAGGGGG CGGTTACGGG GTCACGGCCG 1080

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(2) INFORMATION FOR SEQ ID NO: 220:

-5 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1258 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 220:

TGAATTGAGG GCTTAAAGAT AAACATATGG GRMTGGAGTT GTGTGTCCAT AGGGTTTCAC 60

15 TGCCTATTTG ATTTGAGTTT ATCCCTATTA ATTTTTTACA GTGAAATTTT ATTAAAGTAT 120

AATGTACATA TATTTTCAGT GGATTTTGCT CTGAAGGTC TCCAGTGGTC TGACTACGAG 180

20 ATAGTGCGGC TTCAGCTGTG GGATATTGCA GGGCAGGAGC GCTTCACCTC TATGACACGA 240

TTGTATTATC GGGATGCCCTC TGCTGTGTGT ATTATGTTTG ACGTTACCAA TGCCACTACC 300

TTCAACAACA GCCAGAGGTG GAAACAGGAC CTAGACAGCA AGCTCACACT ACCCAATGGA 360

25 GAGCCGGTGC CCTGCCTGCT CTGGCCAAC AAGTGTGATC TGTCCTCTTG GGCAGTGAGC 420

CGGGASCAGA TTGACCGGTT CAGTAAAGAG AACGGTTTCA CAGGTTGGAC AGAAACATCA 480

GTCAAGGAGA AAAAAATAT TAATGAGGCT ATGAGAGTCC TCATTGAAAA GATGATGAGA 540

30 AATTCACAG AAGATATCAT GTCTTTGTCC ACCCAAGGG ACTACATCAA TCTACAAACC 600

AAGTCCTCCA GCTGGTCTTG CTGCTAGTAG TGTTTGGYTT ATTTTCCATC CCAGTTCTGG 660

35 GAGGTCTTTT AAGTCTCTTC CCTTTGGTTG CCCACCTGAC MATTTTATTA AGTACATTTG 720

AATGTCTCTC TGACTACTGT CCAGTAAGGA GGCCCATTTG CACTTAGAAA AGACACCTGG 780

AACCAKGTG CATTTCTGCA TCTCCTGGAT TAGCCTTTSA CATGTTGCTG RCTCACATTA 840

40 GTGCCAGTTA GTGCCTTCGG TGTAAGATCT TCTCATCAGC CCTCAATTTG TGATCCGGAA 900

TTTTGTGAGA AGGATKAGAA ATCAGCACCT GCGTTTLAGA GATCATAATT CTCACCTACT 960

45 TCTGAGCTTA TTTTCCATT TGATATTTCAT TGATATCATG ACTTCCAATT GAGAGGAAAA 1020

TGAGATCAAA TGTCATTTCC CAAATTTCTT GTAGGCCGTT GPTTCAGATT CTTTCTGTCT 1080

TGGAATGTAA ACATCTGATT CTGGAATGCA GAAGGAGGGG TCTGGGCATC TGTGGATTTT 1140

50 TGGCTACTAG AAGTGTCCCA GAAGTCACTG TATTTTGTAA ACTTCTAACG TCATAATTAA 1200

GTTCCTCTTG TCTTGGGCAT CAAGANTAGT TCCAATTTT TGGGCCGGGG CAGGGTGG 1258

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(2) INFORMATION FOR SEQ ID NO: 221:

60 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1693 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

- 5

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 221:

	CACAATATAT GAAATAGTAC CCTCTAAAAA AGAGAAAAAA AAAATCAGGC GGTCAAACCTT	60
10	AGAGCAACAT TGTCTTATTA AAGCATAGTT TATTTCACCTA GAAAAAATTT AATATCAAGG	120
	ACTATTACAT ACTTCATTAC TAGGAAGTTC TTTTAAAAAT GACACTTAAA ACAATCACTG	180
15	AAAACITGAT CCACATCACA CCCTGTTTAT TTTCTTAAAA CATCTTGGAA GCCTAAGCTT	240
	CTGAGAATCA TGTGGCAAGT GTGATGGGCA GTAAAATACC AGAGAAGATG TTTAGTAGCA	300
	ATTAAAGGCT GTTTGCACCT TTAAGGACCA GCTGGGCTGT AGTGATTCTT GGGGCCAGAG	360
20	TGGCATTATG TTTTACAAA ATAATGACAT ATGTCACATG TTTGCATGTT TGTTTGCTTG	420
	TTGAATTTTT GAACAGCCAG TTGACCAATC ATAGAAAGTA TTACTTTCTT TCATATGGTT	480
25	TTTGGTTCAC TGGCTTAAGA GGTTCCTCAG AATATCTATG GCCACAGCAG CATACCAGTT	540
	TCCATCCTAA TAGGAATGAA ATTAATTTTG TATCTACTGA TAACAGAATC TGGGTCACAT	600
	GAAAAAAAT CATTTTATCC GTCCTTTAAG TATATGTTTA AAATAATAAT TTATGTGTCT	660
30	GCATATTGCA GAACAGCTCT GAGAGCAACA GTTCCCATT AACTCTTTCT GACCAATAGT	720
	GCTGGCACCG TTGCTTCCTC TTTGGGAAGA GGAAAGGGTG TGTGAACATG GCTAACAATC	780
35	TTCAAATACC CAAATTGTGA TAGCATAAAT AAAGTATTTA TTTTATGCCT CAGTATATTA	840
	TTATTTAATT TTTTAGGTAA TGCCTATCTC TTGGTCTATT AAGGAAAGAA GCAATCAGTA	900
	GAGAATTCAG GATAGTTTTG TTTAAATTCT TGCAGATTAC ATGTTTTTAC AGTGGCCTGC	960
40	TATTGAGGAA AGGTATTCCT CYATACAACT TGTTTTAACC TTTGAGAACA TTGACAGAAA	1020
	TTATGCAATG GTTTGTTGAG ATACGGACTT GATGGTGCTG TTTAATCAGT TTGCTTCCAA	1080
45	AGTGGCCTAC TCAAGAGGCC CTAAGACTGG TAGAAATTAA AAGGATTTCA AAACTTTTCT	1140
	ATTCTTTTCT TAAACCTACC AGCAAACCTAG GATTGTGATA GCAATGAATG GTATGATGAA	1200
	GAAAGTTTGA CCAAATTTGT TTTTGTGTTG TTGTGTGTGT TTTGAATTTG AAATCATTCT	1260
50	TATTCCCTTT AAGAATGTTT ATGTATGAGT GTGAAGATGC TAGCGAACCT ATGCTCAGAT	1320
	ATTATCGTGA AGTCTCCCTT CACCTGTTAC AGAGTTTCAG ATCGGTCACT GATAGTATGT	1380
55	ATTTCTTTAG TAAGAATGTG TTAAAATTAC AATGATCTTT TAAAAAGATG ATGCAGTTCT	1440
	GTATTTATTG TGCTGTGTCT GGTCTTAAGT GGAGCCAATT AAACAAGTTT CATATGTATT	1500
	TTTCCAGTGT TGAATCTCAC AACTGTACT TTGAAAATTT CCTTCCATCC TGAATAACGA	1560
60	ATAGAAGAGG CCATATATAT TGCCTCCTTA TCCTTGAGAT TTAATACCT TTATGTTAAA	1620

	AGTTGTGTAT AATTGTTAAA ATCTGTGAAA GAATAAAAAG TGGATTTAA, TTAAAAAAA	1680
5	AAAAAAAAA AAA	1693
10	(2) INFORMATION FOR SEQ ID NO: 222:	
	(i) SEQUENCE CHARACTERISTICS:	
	(A) LENGTH: 1196 base pairs	
	(B) TYPE: nucleic acid	
15	(C) STRANDEDNESS: double	
	(D) TOPOLOGY: linear	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 222:	
20	ACGCGTGGGT CGACCCACGC GTCCGCGACN TGGCGTGGTG GGAAGGGAG AAGGATTGT	60
	AAACCCCGGA GCGAGGTCTT GCTTACCCGA GGCCGCTGCT GTGCGGAGAC CCCCAGGTGA	120
	AGCCACCGTC ATCATGTCTG ACCAGGAGGC AAAACCTTCA ACTGAGGACT TGGGGGATAA	180
25	GAAGGAAGGT GAATATATTA AACTCAAAGT CATTGGACAG GATAGCAGTG AGATTCACCT	240
	CAAAGTGAAA ATGACAACAC ATCTCAAGAA ACTCAAAGAA TCATACTGTC AAAGACAGGG	300
30	TGTTCCAATG AATTCACCTCA GGTTCCTCTT TGAGGGTCAG AGAATTGCTG ATAATCATAC	360
	TCCAAAAGAA CTGGGAATGG AGGAAGAAGA TGTGATTGAA GTTTATCAGG AACAAACGGG	420
	GGGTCATTCA ACAGTTTAGA TATCTTTTTT ATTTTTTTTC TTTCCCTCA ATCCTTTTTT	480
35	ATTTTTAAAA ATAGTCTCTT TGTAAATGTG TGTTCAAAAC GGAATTGAAA ACTGGCACCC	540
	CATCTCTTTG AACATCTGG TAATTTGAAT TCTAGTGCTC ATTATTCATT ATTGTTTGT	600
40	TTCATTGTGC TGATTTTGG TGATCAAGCC TCAGTCCCT TCATATTACC CTCTCCTTT	660
	TAAAAATTAC GTGTGCACAG AGAGGTCACC TTTTCAGGA CATTGCATTT TCAGGCTTGT	720
	GGTGATAAAT AAGATCGACC AATGCAAGTG TTCATAATGA CTTTCCAATT GGCCCTGATG	780
45	TTCTAGCATG TGATTACTTC ACTCCTGGAC TGTGACTTTC AGTGGGAGAT GGAAGTTTTT	840
	CAGAGAACTG AACTGTGGAA AAATGACCTT TCCTTAACCT GAAGCTACTT TTAAAATTG	900
50	AGGGTCTGGA CCAAAGAAG AGGAATATCA GGTGAAGTC AAGATGACAG ATAAGGTGAG	960
	AGTAATGACT AACTCCAAAG ATGGCTTCAC TGAAGAAAAG GCATTTTAAG ATTTTTTAAA	1020
	AATCTTGTC GAAGATCCCA GAAAAGTTCT AATTTTCATT AGCAATTAAT AAAGCTATAC	1080
55	ATGCAGAAAT GAATACAACA GAACACTGCT CTTTTGATT TTATTTGTAC TTTTGGCCT	1140
	GGGATATGGG TTTTAAATGG ACATTGTCTG TACCAGCTTC ATTAAAATAA ACAATA	1196
60		

(2) INFORMATION FOR SEQ ID NO: 223:

(i) SEQUENCE CHARACTERISTICS:

- 5 - (A) LENGTH: 1791 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 223:

10 TCAGGGAGGT GGCAGGAAAG GCTTGGAACA GCTGCCGGAG TGACGGAGCG GCGGCCCCGC 60
CCGGTTGCGC TGGAGGTCGA AGCTTCCAGG TAGCGGCCCG CAGAGCCTGA CCCAGGCTCT 120
15 GGACATCCTG AGCCCAAGTC CCCCACTC AGTGCACTGA TGAGTCCGA AGTGAAGGTG 180
ACAGGCAGA ACCAGGAGCA ATTTCTGCTC CTAGCCAAGT CGGCCAAGG GGCAGCGCTG 240
20 GCCCACTCA TCCATCAGGT GCTGGAGGCC CCTGGTGTCT ACGTGTTTGG AGAACTGCTG 300
GACATGCCCA ATGTTAGAGA GCTGGCTGAG AGTGACTTTG CCTCTACCTT CCGGCTGCTC 360
ACAGTGTTTG CTTATGGGAC ATACGCTGAC TACTTAGCTG AAGCCCGGAA TCTTCCTCCA 420
25 CTAACAGAGG CTCAGAAGAA TAAGCTTCGA CACCTCTCAG TTGTCACCCT GGCTGCTAAA 480
GTAAAGTGTA TCCCATATGC AGTGTGCTG GAGGTCTTGC CCTGCGTAAT GTGCGGCAGC 540
30 TGGAAGACCT TGTGATTGAG GCTGTGTATG CTGACGTGCT TCGTGGCTCC CTGGACCAGC 600
GCAACCAGCG GCTCGAGGTT GACTACAGCA TCGGGCGGGA CATCCAGCGC CAGGACCTCA 660
GTGCCATTGC CCGAACCTG CAGGAATGGT GTGTGGGCTG TRAGGTCTGT CTGTCAGGCA 720
35 TTGAGGAGCA GGTGAGCCGT GCCAACCAAC ACAAGGAGCA GCAGCTGGGC CTGAAGCAGC 780
AGATTGAGAG TGAGGTTGCC AACCTTAAAA AAACCATTAA AGTTACGACG GCAGCAGCAG 840
40 CCGCAGCCAC ATCTCAGGAC CCTGAGCAAC ACCTGACTGA GCTGAGGGAA CCAGCTCCTG 900
GCACCAACCA GCGCCASCCA GCAAGAAAGC CTCAAAGGC AAGGGGCTCC GAGGGAGCGC 960
CAAGATTTGG TCCAAGTCGA ATTGAAAGRA CTGTGCTTTC CTCCCTGGGG ATGTGGGGTC 1020
45 CCAGCTGCCT GCCTGCCTCT TAGGAGTCCT CAGAGAGCCT TCTGTGCCCC TGGCCAGCTG 1080
ATAATCCTAG GTTCATGACC CTTACCTCC CTAACCCCA AACATAGATC ACACCTTCTC 1140
50 TAGGGAGGAG KCAAATGTAG GTCATGTTTT TGTGGTACT TTCTGTTTTT TGTGACTTCA 1200
TGTGTTCCAT TGCTCCCCG TGCCATGCTC TCTCCCTTGT TTCTTAAGA GCTCAGCATC 1260
TGTCCCTGTT CATTACATGT CATTGAGTAG GTGGTAGCC CTGATGGGGG TCGCTCTGTC 1320
55 TGGAGCATAA CCCACAGGCG TTTTCTCTGC CACCCATCC CTGCATGCCT GATCCCCAGT 1380
TCCTATACCC TACCCCTGAC CTATTGAGCA GCCTCTGAAG AGCCATAGGG CCCCCACCTT 1440
60 TACTCACACC CTGAGAATTC TGGGAGCCAG TCTGCCATGC CAGGAGTCAC TGGACATGTT 1500

CATCCTAGAA TCCTGTCACA CTACAGTCAT TTCTTTTCCT CTCTCTGGCC CTGGGTCCT 1560
 GGAATGCTG CTGCTTCAAC CCCAGAGCCT AAGAATGGCA GCCGTTTCTT AACATGTTGA 1620
 5 GAGATGATTC TTCTTTGGCC CTGGCCATCT CGGAAGCTT GATGGCAATC CTGGAAGGGT 1680
 TTAATCTCCT TTGTGAGTT TGGTGGGGAA GGAAGGGTA TATAGATTGT ATTAAAAAAA 1740
 10 AAAAGGTATA TATGCATATA TCTATATATA ATATGACGCA GAAATAAATC T 1791

15 (2) INFORMATION FOR SEQ ID NO: 224:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2517 base pairs

(B) TYPE: nucleic acid

20 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 224:

25 ACACTAGTGG ATCCAAAGAA TTCGGCACAG CGGCACAGCA TTGTTGAGCT TTCTGTGTG 60
 TGTGGGGCCC TCAAGCGAGC TCGACTGGTC CATCCTGGGG TAGCGASGTG GTGTTTGTGA 120
 AAAAGGACGA TGCCATCACC GCATAYAAGA AGTACAACAA CCGGTGTCTG GACGGGCAGC 180
 30 CGATGAAGTG CAACCTTCAC ATGAATGGGA ATGTTATCAC CTCAGACCAG CCCATCCTGC 240
 TCGCGCTGAG TGACAGCCCA TCAATGAAAA AGGAGAGCGA GCTGCCCTCGC AGGGTGAAC 300
 35 CTGCCTCTCT CTCCAACCCC CCTGCCGAAG TGGACCCTGA CACCATCCTG AAGGCACTCT 360
 TCAAGTCTCT AGGGGCCCTCT KTGACCACGC AGCCACAGA WTTCAAAATC AAGCTTTGAG 420
 CAGGGGAGTR AGGCAGCCAG AAGTGGGGGC AGAGGAGGGT GGCTCTGTTT CCCCAGGCA 480
 40 AAGCTTATGA CCAATGGGCC ATCGGACTGG AGACCCCTGA TTGTGGGAAG GGTGCCAGG 540
 GATAAAGAGC TTCTCTACTG GATGGGACCC GCCTTTCTGT GTGTGTCTCT GCCCTGTGCT 600
 45 CTCTCTCTTA CGTTAACGTT TCCTGTAGTA TGTTCCTTCA TCTCATCGCC AAGGTAGGCT 660
 TGTGTTTTTMM AGTGTGTGCC TCCCCGAGCC TCAGCCCCAA GCTGATTTCT TATCTGGAAA 720
 TGGTACACTG AATTCTCTGG GTGGCTTTCT TGTGGCCCCA TGGGATGCAG CGTGGGGGCT 780
 50 GTCTGAAGGA CCCTGCTTTT TCCAGGGGCC GAGGGGCTGC CTTCCTTTTG TGTGTATTAA 840
 GCTTTTCAAA CAATGGAGGG GATGGAGAGC CCTGGTGTCC TGACGGGAGC CAGGTCCGCC 900
 55 TGAGAGCTGT GCCGCTCCTC TGTCTTGTCA GTGGAGGTGC CTGGGTGGGG AGCAGGTCTC 960
 AGGCCTCTTG TCCTCTCCCC AGTGGCTCCA GGCCTACTA GTGGCAAGGG CAGGATGAGG 1020
 CTGCACCGCT GGAAGAGTC TATCTAAGCT CTTGGCTTGG AGTCCCGTGT CGTCTCCRC 1080
 60

	CAGAGGAAGT TCTCCAGAGT TCACCTTTCC CTTTTCCTTG AGTTGTGCTG AATGCCCCAC	1140
	CCCAGCTCTC TTTCCCTTCT GGGTGTCTTT GCTGGGAGGG GGCTGTGTTG TGAGCCCTCC	1200
5	CGGTTCTCAC CTGCCTGGC ACTTAACCAC ACCCTGGTTT TGTGTAGCCG CCAGCTCTCT	1260
	TCTGGTTGGG CCTTTGAAAG GCTCAGCCTC CCATTGTGCA GTGCTTGGGT TTGGAGCTTA	1320
10	TTTGAATGGA AGAGGTCAGT TTGTTCTTGG CTCTCCATTT CTGGCCTCAG TTGTCTACAG	1380
	GACAGTGGTC AGGGATGCCT GGAGGCATAT ATCCAGCTGC CACCAAGGGG CACTGTTTGT	1440
	TCCCACCTAT GTGAGTGACC CCATCCATCC ATGACCAGAG GATTATTTTC CTGCCTTGGC	1500
15	AGAGGAGGAG GAGTCAAGGG AGCAGGGCAG CTCTACCAGG CAAGGTGTTT CCCCAGCATA	1560
	GGCGCAGACA GTTGGGACGA AACTTCAGAG CCCAGGCAGT CCCTGAATGA CCAGGCCAGT	1620
20	GTGTCACTG AGTGGTCCCC TGCTGGTTGG GAGTGAAGAG AATCCAGGCT GGCAGAGCTG	1680
	GAGCCAGTTG GGGAGCACGG TTCTGGGAGC TCTGCAAAAT CAGTAGCAAG TGCTGGAAAA	1740
	GGCACATGCC GAAGATACTC AAGAGCTCCC AAGATTTGCT TGAGGCTAGC CCAGTGAAAA	1800
25	AAACCAGAGA CTCATGTTTC CAGGGGTCAG TCTGTCAGGC AGGAAGGACC CAGGATTTGA	1860
	ACCCAGCTTC AGTGTGCAGG CTCTGAGGCT GCCCAGGACG GGAAAGTCCA AGGAAGGGGC	1920
30	CTGGTGGTGC TCCACTTGCA GTTCTTTAAA GAATGCTGCT TTTTATTTCT CTAACCCTTT	1980
	CAAGTGGGTG CAGACTTCTC GTTAGCAGCT GGAAGACATT CCTCCACAC TTTTCCCTTC	2040
	CTGGCCCAAG AGAGCATCCA GAAGGCAGTA GGACCTGGTT TTTTCAGGTAC TGGGAGCCGG	2100
35	GGGCTCACTG CTTGCACTGT GCTTAGGGTA GGGATGGTAA ATATCCTCCC TGCATGGCTT	2160
	TATCCTCCCT CTCATCCCAA AGCAGGTATC TTCTGGTTGT CACAGAGTTT CATTGAGTCC	2220
40	AGCTGCAGCC ACGTGGCCAT CTGGAGCTGG TGCTATAGGT GACCATCTGG TACATGAGG	2280
	GGACCTGTTT GCCTCCTCCA CTCTATAAGC AGTCATCTTG GGAGACCGGG AGGAGAAGGT	2340
	GGTGGGCTAG TCCTGTGTCC TCCTCCACTT CCCATGCCTC TATGTTACCC ATCTGTGTCT	2400
45	CCTGTGCAGA AGGAGAGGAA GGGGCATTAA GAGATGAAGG GTGATTATGT ATTACTTATC	2460
	CATTTCTGAA TAAACATTTG TTATTCTTAA AAAAAAAAAA AAAAAACTCG AGGGGGG	2517

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(2) INFORMATION FOR SEQ ID NO: 225:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 2424 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 225:

	TTGTANCTAA TCGAGGATTG ATTCTAATGA CAGAGTCTTT CAACACTTTG CACATGATGT	60
5	ATCACGAAGC TACAGCTTGC CATGTGACTG GAGATTTAGT AGAACTTCTG TCAATATTTT	120
	TTTCGGTTTT GAAGTCTACA CGCCTTATC TTCAGAGAAA AGATGTGAAA CAAGCATTA	180
	TCCAGTGGCA GGAGCGAATT GAATTTGCCC ATAAACTGTT AACTCTTCTT AATTCCTATA	240
10	GTCTCCAGA ACTTAGAAAT GCCTGTATAG ATGTCCTCAA GGAAGTTGTA CTTTGTAGTC	300
	CCCATGATTT TYTTCATACT CTGGTTCCTT TTCTACAACA CAACCATTGT ACTTACCATC	360
15	ACAGTAATAT ACCAATGTCT CTTGGACCTT ATTTCCCTTG TCRAGAAAAT ATCAAGCTAA	420
	TAGGAGGGAA AAGCAATATT CGGCCTCCGC GCCCTGAACT CAATATGTGC CTCTTGCCCA	480
	CAATGGTGGA AACCAGTAAG GGCAAAGATG ACGTTTATGA TCGTATGCTG CTAGACTACT	540
20	TCTTTTCTTA TCATCAGTTC ATCCATCTAT TATGCCGAGT TGCAATCAAC TGTGAAAAAT	600
	TTACTGAAAC ATTAGTTAAG CTGAGTGTC TAGTTGCCTA TGAAGGTTTG CCACTTCATC	660
25	TTGCACTGTT CCCCAAACCT TGGACTGAGC TATGCCAGAC TCAGTCTGCT ATGTCAAAAA	720
	ACTGCATCAA GCTTTTGTGT GAAGATCCTG TTTTCGCAGA ATATATTAAA TGTATCCTAA	780
	TGGATGAAAG AACTTTTTTA AACACAACA TTGTCTACAC GTTCATGACA CATTTCTTTC	840
30	TAAAGGTTCA AAGTCAAGTG TTTCTGAAG CAACTGTGC CAATTGATC AGCACTCTTA	900
	TTACAACTT GATAAGCCAG TATCAGAAC TACAGTCTGA TTCTCCAAC CGAGTTGAAA	960
35	TTTCCAAAGC AAGTGCTTCT TTAAATGGG ACCTGAGGGC ACTCGCTTTG CTCCTGTCAG	1020
	TACACACTCC CAAACAGTTA AACCCAGCTC TAATTCCAAC TCTGCAAGAG CTTTAAAGCA	1080
	AATGCAGGAC TTGTCTGCAA CAGAGAACT CACTCCAAGA GCAAGAAGCC AAAGAAAGAA	1140
40	AAACTAAAGA TGATGAAGGA GCAACTCCCA TTAAAAGCG GCGTGTTAGC AGTGATGAGG	1200
	AGCACACTGT AGACAGCTGC ATCAGTGACA TGAAAACAGA AACCAGGGAG GTCCTGACCC	1260
45	CAACGAGCAC TTCTGACAAT GAGACCAGAG ACTCCTCAAT TATTGATCCA GGAAGTGAAC	1320
	AAGATCTTCC TTCCCCTGAA AATAGTTCTG TTAAAGAATA CCGAATGGAA GTTCCATCTT	1380
	CGTTTTTACA AGACATGTCA AATATCAGGT CACAGCATGC AGAAGAACAG TCCAACAATG	1440
50	GTAGATATGA CGATTGTAAA GAATTTAAAG ACCTCCACTG TTCCAAGGAT TCTACCCTAG	1500
	CCGAGGAAGA ATCTGAGTTC CCTTCTACTT CTATCTCTGC AGTTCTGTCT GACTTAGCTG	1560
55	ACTTGAGAAG CTGTGATGGC CAAGCTTTGC CCTCCAGGA CCCTGAGGTT GCTTTATCTC	1620
	TCAGTTGTGG CCATTCCAGA GGACTCTTTA GTCATATGCA GCAACATGAC ATTTTAGATA	1680
	CCCTGTGTAG GACCATTGAA TCTACAATCC ATGTCGTCAC AAGGGATATC TGGCAAAGGA	1740
60	AACCAAGCTG CTTCTTGACA TTAGGTGTAG CATGTCTACT TTTAAGTCCC TCACCCCAA	1800

5 CCCCCATGCT GTTTGTATAA GTTTGTGCTTA TTTGTMTTTTG TGCTTCAGTT TGTCCAGTGC 1860
 TCTCTGCTTG AATGGCAAGA TAGATTTATA GGCTTAATTC TTGGTCAGGC AGAACTCCAG 1920
 ATGAAAAAAA CTTCATCTTT CAGTATACTT CCTAAAGGGC AATCAGATAA TGGATATGTT 1980
 TTATGTAATT AAGAGTTCAC TTTAGTGGCT TTCATTTAAT ATGGCTGTCT GGAAGAACA 2040
 10 GGGTGCCTA GCCCTGTACA ATGTAATTTA AACTTACAGC ATTTTACTG TGTATGATAT 2100
 GGTGTCTCT GTGCCAGTTT TGTACCTTAT AGAGGCAGAT TGCTCCGAT CGCTGTGGTT 2160
 CTTATTATCA AAATTAAGTT TACTTGTATA CGGAACAACC ACAAGAAATT TGATTCTGTA 2220
 15 AAGAATCCTC TTTAGCTGTG GCCTGGCAGT ATATAAATGG TGCTTTATTT AACAGAATAC 2280
 CTGTGGAGGA AATAAAGCAC ACTTGATGTA AAAATAATG TTTTATTTTT ATTGACATGA 2340
 20 CTGATTGATT GCTATTCTGT GCACTNAATT AACTGATG TGATGACTTA AAAAAAAAAA 2400
 AAAAAAAAAA AAAAAAAAAA AAAA 2424

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(2) INFORMATION FOR SEQ ID NO: 226:

30 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1080 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 226:

ATATAGGACG GATAATCTGT TTACATTCTG TTCTTCTCGA TGCACTCACA AGCGGGTAAC 60
 TAGGTGACAA GAAAACAAAG ATCTTATTCA AAAGAGGTCT TACAGCAACC CAACGTCTCA 120
 40 TCTTCCATA GTAAAGATGA CGGCGCCTTG AGGTAAGCTA CAGGCAACAC CACTTCCGCG 180
 TTTCTCTTGC GCCCTGGTCC AAGATGGCGG ATGAAGCCAC GCGACGTGTT GTGTCTGAGA 240
 45 TCCCGGTGCT GAAGACTAAC GCCGACCCC GAGATCGTGA GTTGTGGGTG CAGCGACTGA 300
 AGGAGGAATA TCAGTCCCTT ATCCGGTATG TGGAGAACAA CAAGAATGCT GACAACGATT 360
 GGTTCGACT GGAGTCCAAC AAGGAAGGAA CTCGGTGGTT TGGAAAATGC TGGTATATCC 420
 50 ATGACCTCCT GAAATATGAG TTGACATCG AGTTTGACAT TCCTATCACA TATCCTACTA 480
 CTGCCCCAGA AATTGCAGTT CCTGAGCTGG ATGGAAAGAC AGCAAAGATG TACAGGGGTG 540
 55 GCAAAATATG CCTGACGGAT CATTTCAAAC CTTTGTGGGC CAGGAATGTG CCCAAATTTG 600
 GACTAGCTCA TCTCATGGCT CTGGGGCTGG GTCCATGGCT GGCAGTGGAA ATCCCTGATC 660
 TGATTGAGAA GGGCGTCATC CAACACAAAG AGAAATGCAA CCAATGAAGA ATCAAGCCAC 720
 60

TGAGGCAGGG CAGAGGGACC TTTGATAGGC TACGATACTA TTTTCTGTG CATCACACTT 780
 AACTCATCTA ACTGCTTCCC CGGACACCCT CCACCTCTAG TTGTTACTAA GTAGCTGCAG 840
 5 TAGGCATTGC TGGGGAAGAA ACAAACACAC ACCAAACAGT ACTGCTACTT AGTTTCTAAG 900
 GCTGCACAGG GAAGGGAAAG ACTGGGCTTT GGACAATCTA GAGGTAATTT ATATCCGCCC 960
 10 CCAGGTGGAG CAACATGCCA TTCTGGAGGC ACGGGGTAA CTGAAAGTGA GTACATATAG 1020
 TCTTCTGGT TTCTGGAGAT AACCCATCAA TAAAAGCTGC TTCTCTGGG TAAAAAAAG 1080

15

(2) INFORMATION FOR SEQ ID NO: 227:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1336 base pairs
 20 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 227:

25 TTGCATTCAC AATTACTGGG AGGCAGGCAG GGGCAGTTGC ATGCTGGGGG TGGCTGCATG 60
 GSCTGCCASC TCTCCTGGGT TTGAAGGATG CGGTACASCT GCTTCAGCTG AGCAACGATG 120
 30 TTATCCTTGA TGTCTGGGGT TGAGATCTGC AGGCGGACAC TGCCACTATC AAAGGATCGT 180
 GTGAAATCAC CAGAAAACAT CTCGTAGATC ATCCGAGCCA CTACTGGAAT GACCTGAACC 240
 AAGATGAGTT TCCTTTCCAA TGGTTTCCCA TCTGGCCATT CTTCCCCAAA GCATAAGTAG 300
 35 ATCTCAAACG GTGGCTGCTT CTCTATCTGT CCTTCTGGT GGGCAATGAG ATCGCTAAGG 360
 AATGTTTCCA GACAAAATAG CTTGACCTTC TTTTGTCTCT CAATCAGGTT GGGAGCAACA 420
 40 AGTGATGGGG CACATGGCCC AGACCAGTAC ACCTTGCCT GGCACAGYCT GATGCATAA 480
 ATGGCATGAC CGCTGACCTC CAGGATCAGT CCTCTGTCCA TGACGTCCAG CAGCTTGCTA 540
 GTGAACAGCT TCTGCTTCTC ATTGGTAATA TGCTCAGGAC CTGGGAATTT GACCTGCTCC 600
 45 AGNCTGACGG GACCAAAGAG CTCCTCCTGG TCAGGCATGG GACCCAGGTC CCCATAGAAG 660
 AGTCGGCAGC CCTGAGGGTT GCTCACGGTC ATGGTCCCTG CCGTACTCCT TCCCACGGTA 720
 50 CTGAAACTTG ATGTCCAGGT CAGTCATTGG GAGAGAGCTG ATCCACAGTT CTGGAGAGCT 780
 ATAGAAGGRC TGTATAGGTG CCTGGGGWAC TTCCATCTCC AGGGGTTTCAG TTTTGGGCCA 840
 CACTGCCTCC GGSTGTCAGT TGCCCACT GCAATTGCCC AACTGGCTG GCGCCATGGG 900
 55 AGAACCATTG ATGTTCAAGG AGGGGAAGGT GTCCTGGATG GGAACATGGT GCTGCGACTG 960
 ATCCAGCTCA TCTTCTCAT CTTCTTCATC CACATCATTA TCCTTCTCAT CCCAGGGAGC 1020
 60 AGACCTGTG GATCCTGGGT TAATGATCGA SCCCTGGGGC TGAGGGATGT CACACACTTG 1080

ATATATCTTC ACTGGGTTC TGGGCACCTC CCTTGGTGCC ATCCATACAT CCAGTTGAA 1140
 TTCTCTGCTC TTATTGAGAG CACAGCGCAG CTGGGCCTTC CATTTAGCTG GGTGAGGGTC 1200
 5 ATCCACCCCT TCCTGGTACT TCCCTGTCTC TACAGCCCAG GCCTTAAAAA TGGTATTTTC 1260
 CTCCTCTTGT TGAGGGCTAT GCCGGGTGGC ATGTTTCCAG GGAATCTGGA AGCGTTTAGA 1320
 10 GTCCCTGTGT AGCCAG 1336

15 (2) INFORMATION FOR SEQ ID NO: 228:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2043 base pairs
 (B) TYPE: nucleic acid
 20 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 228:

25 TCAGCTGGTC CCTTCCTTGT GTCTGGGGG ACCTGCTGGC GGCTCTTCC TGGGAGCCAT 60
 GACCTCAGAC CCCACCCACA CTCCAGATCG AGACCCCTGC CTCCTCCCGG CAAATGTCCT 120
 CCCGCTGCCT TGCAGCCTGC ACTTTGCACA TGCTACCCC CAGCACAGTC CCACTGGCCC 180
 30 CTCAMCTCCC CTTCCTGAG CTCTTCCA AGGACTCTG GTCACTGCCT GCTGTGCAKT 240
 CAGAGGCCCA GGTCCAGCA GCCCGGSGGG AACGGGTGCT GCCTSTTCTT CCAGTTAGCT 300
 35 CCAGYTCAGG TCTGAGACCC GTGYTGAGTA AAGGTCTGAG CAMCGACCGT GCCCTCTGCC 360
 CAGGGCTGGG TCCTGAGCAG CTGGTTTTC TGCAGGAAGG TTGGAGCAAG CAAAGTCCTT 420
 CTCTGCCCTC AGGCTCAGCT GCCCAGACTG GGGCGGATGC AGAGAGGCAG GTGGGCTGTG 480
 40 GCTGGACTGG TCCGGAGCTG GCTTCCTTAC CAGAAAAGCC TCAGCCTTCC TCTGGAAGCA 540
 TCCCCGTC TGGCAAGGG GGAAGGGCTC CTTAAGGGG TGTGCTTTC CAGTGGGGAG 600
 45 CAGTCTGGCC CTGCCCCCTA CTAAAGCCTC TGCTCTCAGC ACTTTCCCCC AAGTCTTGT 660
 AACTTGCTTG AAGTGGGTT CTGGCTGCCA GCCAGTCCCT GGACAAACTC TCCTGCCCTT 720
 TTTAAATTTT ACTCATTTTG TATAAACCCA GCAGGCTGGT GTTTACTTAG CCCTGTAGCT 780
 50 TTTTTCATTT TTTCTTTCCG TCTTCTTCT TGAGTTCAGG GTTCAATATT GCCTCCTCGC 840
 CCTGGTGAGG GGAGGTGCTG CTTTCTGCC CCACCTGCCG GCTGGTTCCA GCAGCGCTGG 900
 55 NGCCAGCTG GGGGGCCGGG ATGGGGGCTT CTCTCTCTGG GAGGGGTGCA GGTGCCCTCC 960
 CCAGGCTGGG AGGGTTCCTT CCCTAGCTCC CCATCTGCCC CCGCTGGTGA GAGTTGGGCT 1020
 TCTTGGTCTT GGAATCCCTT GGCATTGGGA ACAGAGCATT TCCAGCATTT GTTGTGTGTG 1080
 60

	TTTTACTCAC CTAACCCCTTA GAAAATGAAT GTTAGAAGGT GCCTGCCGAG GCGGGACAGA	1140
	GTGTTTGCTC GCGCTGGAGA AGGCTCTGCT CAGCCCTGAG AGTCCCTTCC TGCCCCACCG	1200
5	ATACTGGCAC TTTAAAAAGG AAGCTGACCG CACAGTGTCC AGACGAATTG GCCCCCAGAA	1260
	GATGGGGAGT TCTGTCTGCG CCTTCTGTGT CTGCGTGACC TCACCCAGCC TAGGAGGGAG	1320
10	GTGCATTTCAG GGTAGATTTG CCTCTCATTC AAAGTCTGG GGCTTTGGGY GGAAAACAGC	1380
	CAGCTTTGGC GCTGTGGGG AGACTCCTCC AGACCAGGAA CCCCAGAAGG AGACAGAGCC	1440
	TGCCACATCC TCCCACGCCA GGCCCTGGGC CAGGGTGATT GGA CTGAGAA TTTGGCCACA	1500
15	ACCAAATTGA TGCTGGCTGG AACCAGAGGC CAGAAAGCCT GGCTTGTCC CCATGTGGGA	1560
	GCCCTGTCCT CAGCCCTCTT GTCCCTTGA GCTCAGTGAA TTCCCACCAG GTGCCCACAG	1620
20	CTCCTGGACT TCAAATCTA TATATTGAGA GAGTTGGAGA GTATATCAGA GATATTTTGT	1680
	GAAAGGAGTT GGTCTATGCA ATGTCAGTTT GGAATCTTCT TGAAAGTTTA ATGTTTTTAT	1740
	TAGGAGATTT AAAGAAAATA AAGGTCTACA ATATCTTTAG GTTTTTTTT TTTCTGTTT	1800
25	ACCGCACAAA CTGACCACAT GGCATGTCTA TCAGGATGGA GGGTGTCCAT GTTCTCCTCT	1860
	GTCTTTAGGG AGGTGATAAG GAGATGGSCG RAGGGGTGTT TTTTCTTTTG ACTCCCTCC	1920
30	TTTCTAACAG AATGTTGCCA CCACTGCTTG AGTGGGCTGT GTTGTTCCT CTGTCCAGC	1980
	TTCTGTTGTA GAAAATAACA TTGTTAGGGG AACTCAGGCT AGTGTACGG TCTTGGTTTG	2040
	GGG	2043

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(2) INFORMATION FOR SEQ ID NO: 229:

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- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 540 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 229:

	TAAAAAGAAG CGGAGAATC TGGGCGTCGC TCTAGAGATC GATGGGCTAG AGGAGAAGCT	60
50	GTCCCACTGT CGGAGAGACC TGGAGGCCGT GAACTCCAGA CTCCACAGCC GGGAGCTGAG	120
	CCCAGAGGCC AGGAGGTCCC TGGAGAAGGA GAAAACAGC CTAATGAACA AAGCCTCCAA	180
55	CTACGAGAAG GAACTGAAGT TTCTTCGGCA AGAGAACCGG AAGAACATGC TGCTCTCTGT	240
	GGCCATCTTT ATCTCTCTGA CGCTCGTCTA TGCCTACTGG ACCATGTGAG CCTGGCACTT	300
	CCCCACAACC AGCACAGGCT TCCACTTGGC CCCTTGGTCA GGATCAAGCA GGCACCTTCAA	360
60	GCCTCAATAG GACCAAGGTG CTGGGGTGT CCCCTCCCAA CCTAGTGTC AAGCATGGCT	420

TCCTGGGGC CCAGGCCTTG CCTCCCTGGC CTGCTGGGG GTTCCGGGTC TCCAGAAGGA 480
CATGGTGCTG GTCCCTCCCT TAGCCCAAGG GAGAGGCAWT AAAGACACAA AGCTGGAAAT 540

5

(2) INFORMATION FOR SEQ ID NO: 230:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 448 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

15

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 230:

AATTGTGAAA TATTAGAATA TTGTTACTAT TTGACCCAAC TCAAAATCTC CATGGGAAAA 60
TACCTGTCGA TACCCACAGT ATTGTTGAAA ATAATCAGAT GCAGTATCAC AGCTGTGTCA 120
GACTCTAGTA CCAGTTGGGC AATCAAGGCA CAGCTAAAAA TTGAAAACAA AGATCTGGAC 180
25 AACAAAACAG CCAAAGGTGG GGGTCAAGAA GCTCTGACGT GTACCTAGCT GTAGAATGCT 240
ATGCACACGT GCCAGGTGTA GTGTGCATAT CCAGGAAAAA CTGCAGAGAG CCCAGTCTT 300
CAMCTCTGGT TGACCATGAG CTCTGTGTAA GCAGGAAGTG AAGGCTAAGG CAGATTTAAG 360
30 CTCTGAAAGC ATTCCACAAC ATACACACAA ATCGTGCAA GCATTAAGGA AATCTTGTTA 420
CTGCTAAGTG TTGCTGACCC AGGAACAA 448

35

(2) INFORMATION FOR SEQ ID NO: 231:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 407 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

45

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 231:

GTATGCTGCC CCAAACCAAT ATGTGTGGCT GCCTTTWACC TGA CTCTCC AACATGTAGC 60
50 CCCAAGAGGA GGCTCTAGA CTRAGGGAGG GGCTGGTGAC CCAGGTGTGG TGGGGCTGCA 120
TGARACTACC AGAGAGACAG ACATTCTGGA ACTCACCTG GGGGATCCAG TGGATCTGCC 180
TATGGTCTGG TCCACCCAG ACCTGTGAGA TGTTCCTCAT GAGGATGCAC TTGTGCTTCT 240
55 GCAAGTATTG CTGCAGCTTC ATAGTGACTC CCACCAGCAC CAGCAATACA GYTAGCTACC 300
TGTGGCCTTG GATCTCAGCC AGCATGGCTG GGAGAGGGAG CARCTGGGCA TGTACCCTAA 360
60 ATGCTGTTAC CAGGGAAGGA CTCCAGAGT GAAGACAAGT AGGGACT 407

5 (2) INFORMATION FOR SEQ ID NO: 232:

(i) SEQUENCE CHARACTERISTICS:

- 10 (A) LENGTH: 830 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 232:

15 GTATTTGATT TCAGGCTGCT AAATGGGCTC ATTTAGCATT CATTCCTTGA TGTAGACATT 60
AAAAAAAAA CTGAATAGCA TTCTTTCCAG GNTAACTAAT AAAGCAGACA TGCTAAGCCT 120
20 ATAAATACAT CAGCACTGCA GCACACGTTT AAGGTTGCCA CGGACAAGGA TCACACAATA 180
GAGAACACTG TAGTTCGGTC TGCTCACAAG ACCCAGAACA TTGATCAGTT TTTGTTGTTG 240
GTTTATTATT TTTCTGTTAA AAAATTGTGA AAAGTTTGTT TTAGCTAGAT GATATTTTAA 300
25 TAGCTGCGAG TGCTTTGGAA CTATAAAGAT GTCACTACTT AACACACATA CCTTATGTTT 360
TGTTTTGTTT TGTTTTACAC TCAGTATAAA TCAGGAGAAG TTAGCCAACC ATCTAGCATT 420
TAGAATCCTC TTTTTTATTG TCTTCTAAGG ATATGGATGT TCCCATAACA GCAACAAAAC 480
30 AGCAACAAA ACATTTTATA AATATCACTT GATAGACTGT AAGCACCTGC TTAACTTTGT 540
GTNCCAAATA TTTAGTGTGT ATATATATAT ATATATACAC ACACACACAC ATATATATTC 600
35 AACAAATAA GCAAAATATA ACATGCATTT CACATTTTGT CTTTCCCTGT TACGATTTTA 660
ATAGCAGAAC TGTATGACAA GTTTAGGTGA TCCTAGCATA TGTTAATTC AAATTAATGT 720
AAAACAGATT AACACAACA AAGAACTGT CTATTTGAGT GAAGTCATGC TTTCTATTAT 780
40 AATAACTTGG CTTGGTTTAT CCATCAAATG CACACTTATA CTGTTATCTG 830

45

(2) INFORMATION FOR SEQ ID NO: 233:

(i) SEQUENCE CHARACTERISTICS:

- 50 (A) LENGTH: 932 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 233:

55 CCAGAAGAAA GACCAATCTA GAATATGGAA CTCTAATCAC TTCTAGTATT TCAACTTCCT 60
AGCAGAAATG AACTTGCCCC TAGACCTAGG GGATAAGCAA TGTTCTTTAT GTAGCCAATG 120
60 CTACGGAAAC AAAAGAGGTG AAAGAGACCC TTTTATTATA CTTAATGTAC ATATATTGAC 180

5 TTTTGTAGCA AGAATGCCAG AAATAGCCTT CATTTCTACC CTGCAAAATA ATCCAGATCT 240
 GCTTTCTAAA ATGRANTCAG TTTCTAAAGT GAAACATGCA ATATTATATGC TCTGACTGAC 300
 TCCTGAATTG GARGAGGAAG RACTTCTGTT TACAGAAAAC YGTATTGTTA TATATGTCAG 360
 GCTGTGTATT GTGACTATCA GCATTCTGGT GCAAATGAAC TTTTCTCCAT CATCGACTGT 420
 10 GGAAAATGTA TACTTTTAAA GCATATTCTT CTATGAGCAC AGGTCCTCCT AGTGAAACTT 480
 AATTTGACAA AGGGTGTGAT ATGCTTTTCT AACCTGAWTT GTATTAAACAT TCACAGAGCC 540
 TACATTTTCT CATTAGGGTT RTGATGCTCA GTATCTTTCC AAGTGCCAGG CAGRGCTTNC 600
 15 CTTTCTGAT CAAACATACC ATTTTGTGTA TTTCACTACT ATAGACAGTC ACTTCTGCAG 660
 TCCCAATTTA AAAATGCAGA ACTGCTTTAT CCAAGAATGC TGAAAAATAC TGTCTATCC 720
 20 AGGTTTCTTA AACTATAAAA GCAGATTTTG CTTTGTGTTG TTAATCATAG GCATGGCCGA 780
 GCATTGTGGA TTAGCCTGAG GCTTAAATC AGATGCATGT CTGGTAAGAT GACCACTGTC 840
 TCACTATCAA GAGCCTGCAG AGCCATTTTC CAGACCTGTG ATTGCCCAGA ACACATAGTC 900
 25 CCCACGTTTC TAATTTGGAG CAAATCTAAA AG 932

30

(2) INFORMATION FOR SEQ ID NO: 234:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 2786 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 234:

40

TTAGCAGGGT GAGCTGTTAA AACAGCACAC ATCTCTCATC CCCTCTTCCT TTATTCCCCC 60
 CTGGGTTTCA GAAAGGAAGG ATATATGGGG ACCACCTCCC CCTTCTTTGA TCCCAGCATC 120
 45 TCAGTCCCCC TCCCAACCCT CCATATGGCT CTCAATGGTG CTCACTTGCT TGGAAGCAGG 180
 CTCCCAATAG GGAGGGGSCT GCCCTCTACA GTCTCTTTGA CTGTAAGACA GGGCTCTGTA 240
 TCAGTGAGAC GATGAGAAAA GTCCCAGGCT AATGGCAGAA ATTTGCACTT TGAACATGTG 300
 50 TGTTTTGTG TTTGTGGAACC TGAGATTCCT TATTTATTA CAGGAAGTCT GATTTTTTTT 360
 TTTTGGAGTC TTTGTGCTA TATTTTGTGG GGCTGGGAGA GAGAGATTAG ATTATTTTGA 420
 55 CATGGGATCC CTTCCATAAC AGGTACTTTG AAGGCAAGAC ATAGGGTTGA AGAAGCACAA 480
 CCAGCCTCTG AAATCATAGC TCTCCAGTGG CTTTAAAGA AAGCTGGTCC TCAGCACTAA 540
 CAAAATCACT ACAATAGCCT AGTGCTTTTT TGGAAGCCTT TTTAGGGAAG AATGTTAGGT 600
 60

	TCATGGTAAC TAGTATGCTC TTTGAGATTT TTACAGTGTT GAAACTTAAG AATTTTGAGA	660
	GGGTGAGGAG GGTGTTCAG AATCTAAATT ACAGATAGAT GATTGTTTCT TGTGAATTC	720
5	TTTCTTTTCC TTTTTTTTGG TCCCTACCAT TTCCTTACAT TTCCCTTGGG GCCCATCTCT	780
	GGCTCCTTGC TTTTGTTC TTGCTTTGCT TTATCAGTTC ATTCCAGCTC CCTGTTAGTG	840
10	AAGGACACTG CTGTTAGTGA AGGAACAAAG TCTATGAGTC CTAAAATTTT AAGTCAAAGA	900
	AAACTGCTCT GTTCCCTT TAGTAACACT TCTGAAGAGG AAAAACTTCA ATAGCCAAAG	960
	TTAATAATCC TATATAATAA TTGCTTTGGC TTTCACCTAA AATTCCTGGC ATCACAATTT	1020
15	CCTTGGGATA GAGGTGTGT TGGGAATAG ATTGCTTATT GCTGTTCACT GGAGAGAAAA	1080
	GGTAGTGT TTGTACAAG TCATACCGCC AGAAGCCCCA AATCCTATTT TGGCTCATCT	1140
20	TCAGGTAAAG AGTAATTCCT ATCCTGTGTG CCTCAGAAGC TAGAATCGAA GGCTTACCCT	1200
	ATTCATGT TTGTGTCAGA AATGCATGAT GGCTCTTGA AAGAATGACG TTTTGCTGGA	1260
	AAAAAAAAA AGAACAGTT GTGTTTCACA AACATGGCTT ATCAATTTTT TCAAAGAATT	1320
25	CTTTTTTCCC AAAAAGAGGA GTAACAAAT GTCATTTCTG AAAGAGGCTT ACTTTATACC	1380
	AACTAGTGT AGCATTTGGG ATGCCAGGA ACAGAGAGTG AGACACCTAC AATCACCAGT	1440
30	CTCAATGCG CTATTGTTTC TTTTCAGAGT GTTGCAGATT TGCCATTTCT CCATAATATG	1500
	GGGATAGAAA ATGGAATAAA GATAGAAGGG ATGTAGAATA TGCTTTCCTG CCAACATGGT	1560
	TTGGAGTCGA CTTTGGTATA TTGACTAGAT TTGAAAATAC AAGATTGATT AGATGAATCT	1620
35	ACAAAAAGT TGTCTCCTC TCAGGTCCCT TTTACACTTT TTGACTAACT AGCATCTATA	1680
	TTCCACACTT AGCTTTTTTG TCACACTTAT CCTTTGTCTC CGTAAATTC ATTTGCAGTG	1740
40	GTTAGTCATC AGATATTTTA GCCACCTACA CAAAAGCAAA CTGCATTTTT AAAAACTTT	1800
	CTGAGATGGG AGAAAATGTA TTCTCCTTTC CTATACCGCT CTCCAACAA AAAACAAC	1860
	AGTTAGTTCT ACTAATTAGA AACTTGCTGT ACTTTTCTTT TTCTTTTAGG GGTCAAGGAC	1920
45	CCTCTTTATA GCTACCATTT GCCTACAATA AATTATTGCA GCAGTTTGCA ATACTAAAAT	1980
	ATTTTTTATA GACTTTATAT TTTTCTTTT GATAAAGGA TGCTGCATAG TAGAGTTGGT	2040
50	GTAATTAAAC TATCTCAGCC GTTCCCTGC TTTCCCTTCT GCTCCATATG CCTCATTTG	2100
	CTTCCAGGA GCTCTTTTAA TCTTAAAGTT CTACATTTCA TGCTCTTAGT CAAATTCTGT	2160
	TACCTTTTTA ATAACCTTC CCACATGATA TTTCCATCTT GAATTTGGTG TTCTAAATTC	2220
55	TGAAACTGTA GTTGAGATAC AGCTATTTAA TATTTCTGGG AGATGTGCAT CCCTCTTCTT	2280
	KGTGGTTGCC CAAGGTTGTT TTGCGTAACT GAGACTCCTT GATATGCTTC AGAGAATTTA	2340
60	GGCAACACT GGCCATGGCC GTGGGAGTAC TGGGAGTAAA ATAAAAATAT CGAGGTATAG	2400

ACTAGCATCC ACATAGAGCA CTTGAACCTC CTTGTACCT GTTTGGGGAA AAAGTATAAT 2460
 GAGTGACTA CCAATCTAAC TAAGATTATT ATAGTCTGGT TGTTTGAAAT ACCATTTTTT 2520
 5 TCTCCTTTTG TGTTTTCCC ACTTTCCAAT GTACTCAAGA AAATTGAACA AATGTAATGG 2580
 ATCAATTTAA AATATTTTAT TTCTTAAAAG CCTTTTTTGC CTGTTGTAAT GTGCAGGACC 2640
 10 CTTCTCCTTT CATGGGAGAG ACAGGTAGTT ACCTGAATAT AGGTTGAAAA GGTATGTAA 2700
 AAAGAAATTA TAATAAAGG GATACTTTGC TTTTCAAATC TTGTTTCT CTATTCTAG 2760
 GTAAGGCATA TTAATAATAA ATATGT 2786

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(2) INFORMATION FOR SEQ ID NO: 235:

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(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 458 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 235:

GGGTGCAGGA ATTCGGCAGC AGAGAATGTT TGATTTTCTT TCCTATTTTA AGGATCTTCT 60
 30 CTCTTGTTGA TGTGAAAAC TTACCTTAGT GAAGATGTGT TTCAACATGC TGTGTCTT 120
 TACCTGCATA ATCACAGCTA TGCATCTATT CAAAGTGATG ATCTGTGGGA TAGTTTAAAT 180
 GAGGTCAAA ACCAAACACT AGATGTAAAG AGAATGATGA AAACCTGGAC CCTGCAGAAA 240
 35 GGATTTCTTT TAGTGACTGT TCAAAGAAA GGAAAGGAAC TTTTATACA ACAAGAGAGA 300
 TTCTTTTAA ATATGAAGCC TGAAATTCAG CCTTCAGATA CAAGGTACAT GCCCTCTTTC 360
 40 TTTTCATGCC ATCTCTTTTG CACTCTCAGG TGGAAATATT TTAAAGTGTT TTATAATCAT 420
 AAGTTCTTGT GAAACCTAAC AAGATTATCC CTTCCTAA 458

45

(2) INFORMATION FOR SEQ ID NO: 236:

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(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 591 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 236:

AGGATGAAGA GGAAATTATC TCTTGGATTG CTCTCCAGGA AATCCTTCTC TATACTTTAA 60
 AAGCTCTTGT TCTTTTCTAG GARTCCAATG TGCTGATTGC TGCTAACAGT CAGGGTACAA 120
 60

TTAAGGTGCT AGAATTGGTA TGAAGGGTTA ACTCAAGTCA AATTGTACTT GATCCTGCTG 180
 AAATACATCT GCAGCTGACA ATGAGAGARG AAACAGAAAA TGTCATGTGA TGTCTCTCCC 240
 5 CAAAGTCATC ATGGGTTTTG GATTGTGTTT GAATATTTTT TCTTTTTTTC TTKTCCCTCC 300
 TTTATGAGCC TTTGGGACAT TGGGAATACC CAGCCAACTC TCCACCATCA ATGTAACTCC 360
 ATGGACATTG CTGCTCTTGG TGGTGTATC TAATTTTTGT GATAGGGAAA CAAATTCTTT 420
 10 TGAATAAAAA TAAATAACWA AACAATAAAA GTTTATTGAG CCACAGTTGA GCTTGGAAG 480
 TTTTGTCAA ATGCNGCAAG AGATAACTCT TTTTANGAAG TAGCATATGT GAACTATAAT 540
 15 GTAACAGTGA ATAATTTGTA AAGTTCGTAT TTCCCAACCT CTTTGGAAT T 591

20 (2) INFORMATION FOR SEQ ID NO: 237:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1286 base pairs
 (B) TYPE: nucleic acid
 25 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 237:

30 TCTTTTAAAG GTACAGCAGG GAAGAACTGG AACTCAGAG AAAGAACTG CCCTTCCATC 60
 TACAAAAGCT GAGTTTACTT CTCTCCTTC TTTGTTCAAG ACTGGGCTTC CACCGAGCAG 120
 GAGATTACCT GGGCAATTG ATGTTATCGG TCAGACTATA ACTATCAGCC GAGTAGAAGG 180
 35 CAGGCGACGG GCAAATGAGA ACAGCAACAT ACAGGTCCTT TCTGAAAGAT CTGCTACTGA 240
 AGTAGACAAC AATTTTAGCA AACCACCTCC GTTTTTCCTT CCAGGAGCTC CTCCCACTCA 300
 40 CCTTCCACCT CCTCCATTTC TTCCACCTCC TCCGACTGTC AGCACTGCTC CACCTCTGAT 360
 TCCACCACCG GGTTTTCTCT CTCCACCAGG CGCTCCACCT CCATCTCTTA TACCAACAAT 420
 AGAAAGTGGG CATTCCTCTG GTTATGATAG TSGTCTGCA CGTGCAATTTC CATATGGCAA 480
 45 TCGGATGAAG AACGATACAG ATACAGGGAA TATGCAGAAA GAGGTTATGA GCGTCACAGA 540
 GCAAGTCGAG AAAANGAAGA ACGACATAGA GAAAGACGAC ACAGGGAGAA AGAGGAAACC 600
 50 AGACATAAGT CTTCTCGAAG TAATAGTAGA CGTCCCATG AAGTGAAGA AGGAGATAGT 660
 CACAGGAGAC ACAACACAA AAAATCTAAA AGAAGCAAAG AAGGAAAAGA AGCGGGCAGT 720
 GAGCCTGCCC CTGAACAGGA GAGCACCGAA GCTACACCTG CAGAATAGGC ATGGTTTTGG 780
 55 CCTTTGTGT ATATTAGTAC CAGAAGTAGA TACTATAAAT CTGTATTATT TTCTGGATAA 840
 TGTTTAAGAA ATTTACCTTA AATCTGTTC TGTGTTAG TATGAAAAGT TAACTTTTTT 900
 60 TCCAAAATAA AAGAGTGAAT TTTTCATGTT AAGTTAAAA TCTTGTCTT GTACTATTTT 960

5 AAAAAATAAAA AGACAGCAAT GACTTTATAT CCAAGAAAGG AATGTGAATG AGTCACTTAA 1020
 CAGGGAATCT AAAGAGCTGT GTTAGCTGTG TACATACACA GATTATCTGA GAAAAGGTCA 1080
 AGGGTTCCAC TTGGGCCACA GTTTTTTTGT TAATCAAACA CCACTCTCTT AAGRGGCTGC 1140
 ATCACAAARG GCAACCAARG GGCCCTCTT ARGGCTTTGA GGATTAAAC TAGTCTTTAT 1200
 10 CCATTACTGC TGTGGACACT CTTGGCTTRG TATWTTAGG GGGNICTT ACCTTTTTTT 1260
 GGTTTTCCNC ACCTTTTGG TTGGGC 1286

15

(2) INFORMATION FOR SEQ ID NO: 238:

20 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 734 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 238:

ATGGCAGCGC AGAAGGACCA GCAGAAAGAT GCCGAGGCGG AAGGGCTGAG CGGCACGACC 60
 CTGCTGCCGA AGCTGATTCC CTCCGGTGCA GGCCGGGAGT GGCTGGAGCG GCGCCGCGCG 120
 30 ACCATCCGGC CCTGGAGCAC CTTCTGGAC CAGCAGCGCT TCTCACGGCC CCGCAACCTG 180
 GGAGAGCTGT GCCAGGCCT CGTACGCAAC GTGGAGTACT ACCAGAGCAA CTATGTGTTC 240
 35 GTGTTCTCTG GCCTCATCCT GTACTGTGTG GTGACGTCCC CTATGTTGCT GTTGGCTCTG 300
 GCTGTCTTTT TCGGCGCCTG TTAACATTCT CTATCTGCGC ACCTTGAGT CCAAGCTTGT 360
 CCTCTTTGGC CGAAAGGTGA GCCCAGCGCA TCATATGCTC TGGCTGGAGG CATCTCCTTC 420
 40 CCCTTCTTCT GGCTGGCTGG TCGGGGCTCG GCCGTCTTCT GGGTGCTGGG AGCCACCCTG 480
 GTGGTCATCG GCTCCACGC TGCCTCCAC CAGATTGAGG CTGTGGACGG GGAGGAGCTG 540
 45 CAGATGGAAC CCGTGTGAGG TGTCTTCTGG GACCTGCCGG CCTCCCGGGC CAGCTGCCCC 600
 ACCCTGCCC ATGCCGTGTC TGCACGGTCT GCTGCTCGG CCCACAGCGC CGTCCCATCA 660
 CAAGCCCGGG GAGGGATCCC GCCTTTGAAA ATAAAGCTGT TATGGGTGTC ATTCAAAAAA 720
 50 AAAAAAAAAA AAAA 734

55

(2) INFORMATION FOR SEQ ID NO: 239:

60 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 809 base pairs
 (B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 239:

5
CGGGGTCTTC AGGGTACCGG GCTGGTTACA GCAGCTCTAC CCCTCACGAC GCARACATGG 60
CAGCGCAGAA GGACCAGCAG AAAGATGCCG AGGCGGAAGG GCTGAGCGGC ACGACCCTGC 120
10 TGCCGAAGCT GATTCCCTCC GGTGCAGGCC GGGAGTGGCT GGAGCGGCGC CGCGCGACCA 180
TCCGGCCCTG GAGCACCTTC GTGGACCAGC AGCGCTTCTC ACGGCCCGC AACCTGGGAG 240
AGCTGTGCCA GCGCCTCGTA CGCAACGTGG AGTACTACCA GAGCAACTAT GTGTTCGTGT 300
15 TCCTGGGCCT CATCCTGTAC TGTGTGGTGA CGTCCCCTAT GTTGCTGGTG GCTCTGGCTG 360
TCTTTTTCGG CGCTGTAC ATTCTCTATC TGCGCACCTT GGAGTCCAAG CTTGTGCTCT 420
20 TTGGCCGAGA GGTGAGCCCA GCGCATCAGT ATGCTCTGGC TGGAGGCATC TCCTTCCCCCT 480
TCTTCTGGCT GGCTGGTGCG GGCTCGGCCG TCTTCTGGGT GCTGGGAGCC ACCCTGGTGG 540
TCATCGGCTC CCACGCTGCC TTCCACCAGA TTGAGGCTGT GGACGGGAG GAGCTGCAGA 600
25 TGGAACCCGT GTGAGGTGTC TTCTGGGACC TGCCCGCCTC CCGGGCCAGC TGCCCCACCC 660
CTGCCATGC CTGTCTGCA CGGCTCTGCT GCTCGGGCCC ACAGCGCCGT CCCATCACAA 720
30 GCCCCGGGAG GGATCCCGCC TTGAAAATA AAGCTGTTAT GGGTGTCAAT CAGGAAAAAA 780
AAAAAAAAA AAAAAAAAAA AAAAAAAAAA 809

35

(2) INFORMATION FOR SEQ ID NO: 240:

(i) SEQUENCE CHARACTERISTICS:

40 (A) LENGTH: 2201 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 240:

TGACCCACG CGTCCGGCAA CATGGCGGCT GCCGTGGTGC AGCGCCCGG CTGAGCGACA 60
GCAAGTGCAG CGGGCTCCTA CCCCAGGTGA GGGGTGGCCT CCGCGTGGGA TCCTGCCCTC 120
50 TTCAGCCCGC TCCTGTCCCC GACATCACGT GTATTCCGCA CGTCCCCTCC GCGCTGTGTG 180
TCTACTGAGA CGGGGAGGCG TGACAGGGCC CGGGTCCCTT CTCAGTGGTG CTCTGTGCTT 240
55 CAGGGCAAGC TCCCCGTCTC CGGGCGCACT TCCCTCGCCT GTGTTCGGTC CATCCTCCTT 300
TCTCCAGCCT CCTCCCCCTC GAGGCGGATG AMCCGGACGA CCGGCCAGTG CCTGGCACCC 360
CGGGGTGACC ARGGTCCAMG GGGAACCCGA AGTCCGAGGA GCCCARGTC CCGAACCAGG 420
60

	ARGGGCTGCA GCGCATCAMC GGCCTGTCTC CCGGCCGTTT GGCTCTCATA GTGGCGGTGC	480
	TGTGCTACAT CAATCTCCTG AACTACATGG ACCGCTTCAC CGTGGCTGGC GTCCTTCCCG	540
5	ACATCGAGCA GTTCTTCAAC ATCGGGGACA GTAGCTCTGG GCTCATCCAG ACCGTGTTC	600
	TCTCCAGTTA CATGGTGTG GCACCTGTGT TTGGCTACCT GGGTGACAGG TACAATCGGA	660
10	AGTATCTCAT GTGGGGGGC ATTGCCCTTCT GTTCCCTGGT GACACTGGGG TCATCCTTCA	720
	TCCCCGGAGA GCATTTCTGG CTGCTCCTCC TGACCCGGGG CCTGGTGGGG GTCGGGGAGG	780
	CCAGTTATTC CACCATCGCG CCCACTCTCA TTGCCGACCT CTTTGTGGCC GACCAGCGGA	840
15	CCGGATGCTC AGCATCTTCT ACTTTGCCAT TCCGGTGGGC AGTGGTCTGG GCTACATTC	900
	AGGCTCCAAA GTGAAGGATA TGGCTGGAGA CTGGCACTGG GCTCTGAGGG TGACACCGGG	960
20	TCTAGGAGTG GTGGCCGTTT TGCTGTCTGT CCTGGTAGTG CGGGAGCCGC CAAGGGGAGC	1020
	CGTGGAGCGC CACTCAGATT TGCCACCCCT GAACCCACC TCGTGGTGGG CAGATCTGAG	1080
	GGCTCTGGCA AGAAATCCTA GTTTCGTCTT GTCTTCCCTG GGCTTCACTG CTGTGGCCTT	1140
25	TGTACGGGGC TCCCTGGCTC TGTGGGCTCC GGCATTCTCG CTGCGTTCCC GCGTGGTCTT	1200
	TGGGGAGACC CCACCCCTGC TTCCCGGAGA CTCTCTGCTT TCCTCTGACA GTCTCATCTT	1260
30	TGGACTCATC ACCTGCCCTGA CCGGAGTCTT GGGTGTGGGC CTGGGTGTGG AGATCAGCCG	1320
	CCGGCTCCGC CACTCCAACC CCCGGGCTGA TCCCTGGTC TGTGCCACTG GCCTCCTGGG	1380
	CTCTGCACCC TTCTCTTCC TGTCCCTTGC CTGCGCCCGT GGTAGCATCG TGGCCACTTA	1440
35	TATTTTATC TTCAATGGAG AGACCCCTCT GTCCATGAAC TGGGCCATCG TGGCCGACAT	1500
	TCTGCTGTAC GTGGTGATCC CTACCCGACG CTCCACCGCC GAGGCCTTCC AGATCGTGCT	1560
40	GTCCACCTG CTGGGTGATG CTGGGAGCCC CTACCTCATT GGCCTGATCT CTGACCGCCT	1620
	GCGCCGAAC TGGCCCCCTT CTTCTTTGTC CGAGTTCCGG GCTCTGCAGT TCTCGTCTAT	1680
	GCTCTGCGCG TTTGTGGGG CACTGGGCGG CGCACTTTCC TGGGCACCGC CATCTTCATT	1740
45	GAGGCCGACC GCCGGCGGGC ACAGCTGCAC GTGCAGGGCC TGCTGCACGA AGCAGGGTCC	1800
	ACAGACGACC GGATGTGGT GCCCCAGCGG GGCCGCTCCA CCCGCGTGCC CGTGGCCAGT	1860
50	GTGCTCATCT GAGARGCTGC CGCTCACCTA CCTGCACATC TGCCACAGCT GGCCCTGGGC	1920
	CCACCCACG AAGGGCCTGG GCCTAACCCC TTGGCCTGGC CCAGCTTCCA GAGGGACCCT	1980
	GGGCGGTGTG CCAGCTCCCA GACACTACMT GGGTAGCTCA GGGGAGGAGG TGGGGTCCA	2040
55	GGAGGGGGAT CCTCTCCAC AGGGGAGCC CCAAGGGCTC GTGCTATTT GTAACGGAAT	2100
	AAAATTTGTA GCCAGACCCC AGGTGCCTGC TCTCGTCTTT CTCTGGGTGG CCTCTGATCT	2160
60	TGCACCCCGT CTTCACCCCA GGGCTCCTGA AGACTGTGGG T	2201

(2) INFORMATION FOR SEQ ID NO: 241:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1661 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

10

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 241:

15	GTCTTCCCG ACATCGAGCA GTTCTTCAAC ATCGGGGACA GTAGCTCTGG GCTCATCCAG	60
	ACCGTGTTC TCTCCAGTTA CATGGTGTG GCACCTGTGT TTGGCTACCT GGGTGACAGG	120
	TACAATCGGA AGTATCTCAT GTGCGGGGGC ATTGCCCTTCT GGTCCCTGGT GACACTGGGG	180
20	TCATSCITCA TCCCCGAGA GCATTCTTGG CTGCTCCTCC TGACCCGGGG CCTGGTGGGG	240
	GTGCGGGAGG CCAGTTATTC CACCATCGCG CCCACTCTCA TTGCCGACCT CTTTGTGGCC	300
	GACCAGCGGA SCGGATGCTC AGCATCTTCT ACTTTGCCAT TCCGGTGGGC AGTGGTCTGG	360
25	GCTACATTGC AGGCTCCAAA GTGAAGGATA TGGCTGGAGA CTGGCACTGG GCTCTGAGGG	420
	TGACACCGGG TCTAGGAGTG GTGGCCGTTT TGCTGCTGTT CCTGGTAGTG CGGGAGCCGC	480
30	CAAGGGGAGC CGTGGAGCGC CACTCAGATT TGCCACCCCT GAACCCACC TCGTGGTGGG	540
	CAGATYTGAG GGCTCTGGCA AGAAATCCTA GTTTCGTCTT GTCTTCCCTG GGCTTCACTG	600
	CTGTGGCCTT TGTACGGGC TCCCTGGCTC TGTGGGCTCC GGCATTCTTG CTGCGTTCCC	660
35	GCGTGGTCCT TGGGGAGACC CCACCTGCC TTCCCGAGA CTCTGCTCT TCCTCTGACA	720
	GTCTCATCTT TGGACTCATC ACCTGCCTGA CCGGAGTCTT GGGTGTGGGC CTGGGTGTGG	780
40	AGATCAGCCG CCGGTCCGC CACTCCAACC CCCGGGCTGA TCCCTGGTC TGTGCCACTG	840
	GCCTCTGGG CTCTGCACCC TTCTCTTTC TGTCCTTGC CTGGCCCCGT GGTAGCATCG	900
	TGGCCACTTA TATTTTCATC TTCAITGGAG AGACCTCCT GTCCATGAAC TGGGCCATCG	960
45	TGGCCGACAT TCTGCTGTAC GTGGTGATCC CTACCCGACG CTCCACCGCC GAGGCCTTCC	1020
	AGATCGTGCT GTCCACCTG CTGGGTGATG CTGGGAGCCC CTACCTCATT GGCCTGATCT	1080
50	CTGACCGCCT GCGCCGAAC TGGCCCCCCT CCTTCTGTG CGAGTTCCGG GCTCTGCAGT	1140
	TCTCGTTCAT GCTCTGCGCG TTTGTGTGGG CACTGGGCGG CGCACTTTCC TGGGCACCGN	1200
	CATCTTCATT GAGGCCGACC GCCGGCGGGC ACAGCTGCAC GTGCAGGGCC TGCTGCACGA	1260
55	AGCAGGTCC ACAGACGACC GGATTGTGGT GCGCCAGCGG GCGCGCTCCA CCCGCGTGCC	1320
	CGTGGCCAGT GTGCTCATCT GAGAGGCTGC CGCTCACCTA CCTGCACATC TGCCACAGCT	1380
60	KGCCCTGGGC CCACCCACG AAGGGCCTGG GCCTAACCC TTGGCCTGGC CCAGCTTCCA	1440

5 GAGGGACCCT GGGCCGTGTG CCAGCTCCCA GACACTACMT GGGTAGCTCA GGGGAGGAGG 1500
 TGGGGGTCCA GGAGGGGGAT CCTCTCCAC AGGGGNCACC CCAAGGGCTC GGTGCTATTT 1560
 GTAACGGAAT AAAATTTGTA GCCAGACCCC AGGTGCCTGC TCTCGTCTTT CTCTGGGTGG 1620
 CCTCTGATCT TGCACCCCGT CTTACCCCA GGGCTCCTGA A 1661

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(2) INFORMATION FOR SEQ ID NO: 242:

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(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1146 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 242:

NGACAGAAAA GCAGAAGATG AGACTCTGTT CATTCACTTT TCCTAGGCCC ATCCTGTGGT 60
 25 CATCTTTCCC CCTCCCATCA TACCTCCTCC TTCCTGGAGC CTCTGCCGGC TTGGCTGTAA 120
 TGGTGGCACT TACCTGGATA TTTCAGTGGG AGGATGAAAG GCGAGACTCA CCCTACGCGG 180
 TGGGACAGAT GGGGAGAGGA AAAAGGCAGA GATNGCCAGG AGAGGGGTGC AGGACAAACC 240
 30 AGAGAGGTTG GGTCAAGGGA AAAGTGTTGG GAGAAAGTGG GGTGCAGGCC CTGCAGGCCG 300
 GTTTAGCCAG CAGCTGCGGC CTCCTCGGGC CCTTGGCATC CAACTTCGCA GACAGGGTAC 360
 35 CAGCCTCCTG GTGTGTATCA TAGGATTTGT TCACATAGTG TTATGCATGA TCTTCGTAAG 420
 GTTAAGAAGC CGTGGTGGTG CACCATGACA TCCAACCCGT ATATATAAAG ATAAATATAT 480
 ATATATATGT ATGTAAATTA TAGCACTGAG GGCCCTGCTG CCCTGCTGGA CCAAGCAAAA 540
 40 CTAAGCCTTT TGGTTTGGGT ATTATGTTTC GTTTTGTTAT TTGTTTGTIT TTGTGGCTTG 600
 TCTTATGTCTG TGATAGCACA AGTGCCAGTC GGATTGCTCT GTATTACAGA ATAGTGTITT 660
 45 TAATTCATCA ATGTTCTAGT TAATGTCTAC CTCAGCACCT CCTCTTAGCC TAATTTTAGG 720
 AGGTTGCCCA ATTTTGTTTC TTCAATTTTA CTGGTTACTT TTTTGTACAA ATCAATCTCT 780
 TTCTCTCTTT CTCTCCTCCC CACCTCTCAC CCTTGCCCTC TCCATCTCCC TCTCCCGCCC 840
 50 TCCCCTCCTC CCTCTGGCTC CCCGTCATC TTCTGTCCAC TCCATTCTCT CTCCCTCTCT 900
 CCTGCCTCCT GCTGCCCCCT CCCAGCCCA CTTSCCGAG TTGTGCTTGC CGCTCCTTAT 960
 55 CTGTTCTAGT TCCGAAGCAG TTTCACCTGA AGTTGTGCAG TCCTGGTTGC AGCTTTCCGC 1020
 ATCTGCCTTC GTTTCGTGTA GATTGACGCG TTCTTTGTA ATTTCACTGT TTCTGACAAG 1080
 ATTTAAAAAA AAAAAAGGA AAAAAAAAAA AAAAAAAC TCGAGGGGGG GCCCGGTACC 1140
 60

CAATTG

1146

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(2) INFORMATION FOR SEQ ID NO: 243:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 1350 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 243:

15

AACCACGGC TGCTGCGGCA GGGCGTGGAG GGCAGAGGGC CGCGGAGGCG CAGTTGCAAA 60

CATGGCTCAG AGCAGAGACG GCGGAAACCC GTTCGCGGAG CCCAGCGAGC TTGACAACCC 120

20

CTTTCAGCCA CCACCAGCCT ATGAGCCTCC AGCCCCTGCC CCATTGCCTC CACCCTCAGC 180

TCCCTCCTTG CAGCCCTCGA GAAAGCTCAG CCCACAGAA CCTAAGAACT ATGGCTCATA 240

CAGCACTCAG GCCTCAGCTG CAGCAGCCAC AGCTGAGCTG CTGAAGAAAC AGGAGGAGCT 300

25

CAACCGGAAG GCAGAGGAGT TGGACCGAAG GAGNCGAGAG CTGCAGCATG CTGCCCTGGG 360

RGGCACAGCT ACTCGACAGA ACAATGGGCC CCCTCTACCT TCTTTTGTGTC CAGTTCAGCC 420

30

CTGCTTTTTC CAGGACATCT CCATGGAGAT CCCCCAAGAA TTTCAGAAGA CTGTATCCAC 480

CATGTACTAC CTCTGGATGT GCAGCAGGST GGCTCTTCTC CTGAACCTTC TCGCCTGCCT 540

GGCCAGCTTC TGTGTGGAAA CCAACAATGG CGCAGGCTTT GGGCTTTCTA TCCTCTGGGT 600

35

CCTCCCTTTC ACTCCCTGCT CCTTTGTCTG CTGGTACCGC CCCATGTATA AGGCTTTCCG 660

GAGTGACAGT TCATTCAATT TCTTCGTTTT CTCTTCATT TTCTTCGTCC AGGATGTGCT 720

40

CTTTGTCTTC CAGGCCATTG GTATCCAGG TTGGGGATTG AGTGGCTGGA TCTCTGCTCT 780

GGTGGTGCCG AAGGCAACAC AGCAGTATCC GTGCTCATGC TGCTGGTCGC CTTGCTCTTC 840

ACTGGCATTG CTGTGCTAGG AATTGTCTATG CTGAAACGGA TCCACTCCTT ATACCGCCGC 900

45

ACAGGTGCCA GCTTTCAGAA GGCCAGCAA GAATTTGCTG CTGGTGTCTT CTCCAACCCT 960

GCGGTGCGAA CCGCARCTTG CCAATGCAGC CGCTGGGGCT GCTGAAAATG CCTTCCGGGC 1020

50

CCCGTGACCC CTGACTGGGA TGCCCTGGCC CTGCTACTTG AGGGAGCTGA CTTAGCTCCC 1080

GTCCCTAAGG TCTCTGGGAC TTGGAGAGAC ATCACTAACT GATGGCTCCT CCGTAGTGCT 1140

CCCAATCCTA TGGCCATGAC TGCTGAACCT GACAGGCGTG TGGGGAGTTC ACTGTGACCT 1200

55

AGTCCCCCA TCAGGCCACA CTGCTGCCAC CTCTCACAG CCCCACCCA GCTTCCCTCT 1260

GCTGTGCCAC GGCTGTGCT TCGGTTATTT AAATAAAAAG AAAGTGAAC TGGAAAAAAA 1320

60

AAAAAAAAA AAAAAAAAAAG GGGGNCNC 1350

5 (2) INFORMATION FOR SEQ ID NO: 244:

(i) SEQUENCE CHARACTERISTICS:

- 10 (A) LENGTH: 1529 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 244:

15 TCCCAGAGGC CGGGGGTTC CAGCTCTGCC TGTAGCAGAG CCCTGAGGAG GAGGAGGAAG 60
AGGATGTGCT GAAATACGTC CGGAGATCT TTTTCAGCTA GGCATAAAC TGTGCACTGA 120
ACTGTCTGCC GAGAGCAGCT GGAGGACAGC TGAGCTTCCA CTGGTGCTGC TGGGCCGMC 180
20 GCCTGTGGGA ATGGGGCTCT CTGTGCTCCT ACCTTTGTGC CTTCCTGGGC CTGGCAGATT 240
CACCTCAGGC CAGAAGCCCC TGGACACTCC GGGCCTTGGG GTGCCGTTCT GAGTGTGCGG 300
25 AAGGCAGGAC TCAAATGAG ATCCCATTTG ACTCCCTCTG TATGTACTGT GCCCTCTCCT 360
GGCTCTTGAG GCTCTGGAGT CCCAATTGTC TGTGTTAGTC AGTGACCAGG TTCCAGGGAA 420
AATRATGTCA TGTGGTGGTC CAACTTACTG GAACCAAAGA GACAGTACTT TGCAAAGAAA 480
30 AGGATCACTG CCAGGTGCAC TGAATTTGCT ACAGTTTACT CCGCATGATC TCTCCTGAAG 540
GAGGAAGCCT GTTTCAAAAA TAGTTTCCAT CATGAGTCTA TCAATGAGCT CCCACCTCTC 600
35 CAGCCAGCCT AGAAAGCAAA CGAGCTGCCC ACAGTTCTCT GCCCTGTCTG GGAGGTTGAG 660
GCCACAGTGT ATAGACTGGT AAGCCAGACA GGCCTCTCTC CGCAAGCTGC TACCTTGCTT 720
TCACCTGTAC CTTGGTCCCC GGGCAGCTAG CTATAAGCA AGAGGGACAG GAGCCAGAA 780
40 GAGACACTGA GGACAAGAGA TCACACCAGA GTACATGTCT CTGCCTCTGT TTTTCAGTGTG 840
GCTTTGGACA GGAATATATG AATAAATCAC TGCCATACAG GTTTTCCAAT ACACAAGTGC 900
45 TAGAAAATAC ACACAATTCC CCAATGCGTA AGTTGTGCTA ATGTCTTTCC AAGTTCTGGG 960
TTGGGAAGTG GAGGGTGGCA GCGTTTGTPT GTGCGCAACC GTCCAGTCCT GTTCACAGCG 1020
AGGATTTGGA GTCCTCCAGG GTCTCATCAT GGGAGTGATT TGTACGCGGA CGCCTCTGCC 1080
50 CTGTCTGGCT TCAGGTCCAG GGAAGCTTTG AAGCAGTCAA GCCTTGCTTT TGTACCCCAT 1140
GTGTCTGTCT TTTGTTGAGT CACTCAGAGA TCACTCTGG ACCTCTGGGG TTGGAGTTCC 1200
55 AGTGATGGCT TATGGCGGCC CACTCACTAT GGTGGGCTGA GTGGAAGCTC CTTAACCATG 1260
TCCCAGAGA CACTGAGGTG CTCGCTCTTT TAATGTCCTC GTTTGTTGCC GTAAGTTCTT 1320
TGCTAGGTTT CATTTTGGCA TTTGGCAAAT CAGCCTGGAA GTCTGGCCCC ATGACAGCAA 1380
60

TCACTCCCTC CCCACCCCTCC TGAAGCTAGA GGAAGATTG CTCAGATCCA TTAATTAAAG 1440
 CAGGAATTGG TGTGACAATG AGCTGCATGG TTTAGGGAGT CTTTGGGAGC CTTGGAAGTC 1500
 5 CTGAAGGACA AACAACTCTG TACTAAGAA 1529

10 (2) INFORMATION FOR SEQ ID NO: 245:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1537 base pairs

(B) TYPE: nucleic acid

15 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 245:

20 GTGCGAGGTC CCCGCCAGCC CCCAGCGGCC TTCCCGGCCC GGGGCGCTCC CAGAGCAAAC 60
 GAGGCCCTTG AGAGCTCCAC CTAGTTCACA GGATAAAATC CCACAGCAGA ACTCGGAGTC 120
 AGCAATGGCT AAGCCCCAGG TGGTTGTAGC TCCTGTATTA ATGTCTAAGC TGTCTGTGAA 180
 25 TGCCCCTGAA TTTTACCCTT CAGGTTATTC TTCCAGTTAC ACAGAATCCT ATGAGGATGG 240
 TTGTGAGGAT TATCCTACTC TATCAGAATA TGTTCAGGAT TTTTGAATC ATCTTACAGA 300
 30 GCAGCCTGGC AGTTTGTGAA CTGAAATGA ACAGTTTGCA GAGACCCTGA ATGGTTGTGT 360
 TACAACAGAT GATGCTTTGC AAGAACTTGT GGAATCCTC TATCAACAGG CCACATCTAT 420
 CCCAAATTC TCTTATATGG GAGCTCGCCT GTGTAATTAC CTGTCCCATC ATCTGACAAT 480
 35 TAGCCACAG AGTGGCAACT TCCGCCAATT GCTACTTCAA AGATGTCGGA CTGAATATGA 540
 AGTTAAAGAT CAAGCTGCAA AAGGGATGA AGTTACTCGA AAACGATTC ATGCATTTGT 600
 40 ACTCTTCTG GGAGAATTT ATCTTAACCT GGAGATCAAG GGAACAAATG GACAGGTAC 660
 AAGAGCAGAT ATTCTTCAGG TTGGTCTTCG AGAATTGCTG AATGCCCTGT TTTCTAATCC 720
 TATGGATGAC AATTTAATTT GTGCAGTAAA ATTGTTAAAG TTGACAGGAT CAGTTTTGGA 780
 45 AGATGCTTGG AAGGAAAAAG GAAAGATGGA TATGGAAGAA ATTATTGAGA GAATTGAAAA 840
 CGTTGTCTTA GATGCAAACT GCAGTAGAGA TGTAAAACAG ATGCTCTTGA AGCTTGTAGA 900
 50 ACTCCGGTCA AGTAACTGGG GCAGAGTCCA TGCAACTTCA ACATATAGAG AAGCAACACC 960
 AGAAAAATGAT CCTAACTACT TTATGAATGA ACCAACATTT TATACATCTG ATGGTGTTC 1020
 TTTCACTGCA GCTGATCCAG ATTACCAAGA GAAATACCAA GAATTACTTG AAAGAGAGGA 1080
 55 CTTTTTCCA GATTATGAAG AAAATGGAAC AGATTTATCC GGGGCTGGTG ATCCATACTT 1140
 GGATGATATT GATGATGAGA TGGACCCAGA GATAGAAGAA GCTTATGAAA AGTTTGTGTT 1200
 60 GGAATCAGAG CGTAAGCGAA AACAGTAAAG TTAAATTTCA GCATATCAGT TTTATAAAGC 1260

5 AGTTTAGGTA TGGTGATTTA GCAGAACACA AGAGAGCAAG AAAATGTGTC ACATCTATAC 1320
 CAAATTRAGG ATGTTGAGTT ATGTTACTAA TGTATGCAAC TTTAATTTTG TTAAACACTA 1380
 TCTGCCAAAA TAAACTTTAT TCCCTATAAC TTAAAATGTG TATATATATA TAATAGTTTA 1440
 TTATGTACAG TTAATTCCTAC TGTTTTGGCT GCAATAAAAT CGATTTTGAA ATAAAWRAAA 1500
 10 AAAAAAAAAA AAGGGNGGCC GCTCTAGAGG ANCCAAG 1537

15 (2) INFORMATION FOR SEQ ID NO: 246:

(i) SEQUENCE CHARACTERISTICS:

20 (A) LENGTH: 506 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 246:

25 TGCAGGATTT GGCCAGGACC CSCCGCGGTG GCGGTGCTA TCGCTTCGCA GAACCTACTC 60
 AGGCAGCCAG CTGAGAAGAG TTGAGGGAAA GTGCTGCTGC TGGGTCTGCA GACCGCATGG 120
 30 ATAACGTGCA GCCGAAAATA AAACATCGCC CCTTCTGCTT CAGTGTGAAA GGCCACGTGA 180
 AGATGCTGCG GCTGGATATT ATCAACTCAC TGGTAACAAC AGTATTCATG CTCATCGTAT 240
 CTGTGTTGGC ACTGATACCA GAAACCACAA CATTGACAGT TGGTGGAGGG GTGTTTGCAC 300
 35 TTGTGACAGC AGTATGCTGT CTTGCCGACG GGGCCCTTAT TTACCGGAAG CTTCTGTTCA 360
 ATCCCAGCGG TCCTTACCAG AAAAGCCTG TGCAATGAAA AAAAGAAGTT TTGTAATTTT 420
 40 ATATTACTTT TTAGTTTGAT ACTAAGTATT AAACATATTT CTGKATTATT CCAAAAAAAAA 480
 AAAAAAAAAA AAAAAAATT TGGTGG 506

45

(2) INFORMATION FOR SEQ ID NO: 247:

(i) SEQUENCE CHARACTERISTICS:

50 (A) LENGTH: 1348 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 247:

55 GTCTTTCTTT TNCTGTTTTG AGTTGGTGAG TGAGTGAATA GGGTAACATG GGCCTTCAGG 60
 ATGACCCCTT GGAACCTGTC CGAGTTCCTT AAATCTCAGC TGGGATCCTG GACCTGGGAG 120
 60 GCCCCTGTGA GGGCCAGCTC TGGAAAAACC TGGGAGTTGA TGCCGAGGY TGGGAAGAAC 180

TCTGCTCGAG GGCAGGGTGC CCTGGAACAC TGGTAGTTCT GGGGCTGGGA GGGAGAGGGG 240
 CTCCGGCTTT CTCTGAAATG AACACTGCTC TTCAGCAGTT CAAGTACTTG TTCTCAAAAC 300
 5 ATTTTCTAAT TGATTTGGTAG GTTTTCATAA GCATTGTTC TTTAAGGCAT GGAAAGGGAA 360
 GAATGCTCAA GCAAGTCATG TTTGTTTTCA GTGGGATGGG CCCGCGTTCT CACTGCTGGG 420
 10 GGCTTCCCCT TGCATGTGGC ACCTTTGTGC AGGCCACCA GGCAGACTCT TCCCACCTTC 480
 TCCCAGTGAA GCACCAAGG GCTTGAACCG TAATTTGGCT AATCAGAGGC ATTTTTTTTG 540
 TCCTAGTATC TTTCACACTT GTCCAACCGT CTTATTTTTT TAAAAGTTCT GTTGCTTGTA 600
 15 TTAACACGAA ACTAGAGAGA AATAGTTTCT GAAGCCAGTT TATTGTGAAG ATCCCAAGG 660
 GGAGGTTCGG TAGAGAAAAA TAGTAAGCTG GTTTAGAAAC TGACGAGGGC AAACAGCCAG 720
 20 GACGCATTGG AGAGGAATTT GCCAAAGATC TACCCTGAGA TAACGCCTGT CCAGTGTCTT 780
 CACCACGTGA ATAACCAGCG CTCCAAAGTG TTTTCTGCT TTGAAAAAA AAATTCCACA 840
 AGCTTTTAAA GGTGCATTTA AGAATCCATG TGACTTTAGA ATGGAAGTGC CGGCCCTGGC 900
 25 AACTGTACAG TGTGCTAGAA GGTTCGATGC CTCTGGAATG CATGTGATAC TCATCTCCAT 960
 TTTGTTTCCT TGATTGCATT TTTGTTCTTT TAGCAGATCT GTCCCTGTGG GTGGTGTCTA 1020
 30 AGAAGTCGGA CACCTTGGTT TTTGTGTTAG ATTGAGCTGG GCAGCTGCAA TCAGCTTCTT 1080
 TATATGCAAA TTAGGCACGA CCCATCTGTG GTTCCCTGGT TGGTGGCTAA TGAAGTGAGG 1140
 GGAGGGAGGG ATGTCACCCC AAAAGTAGGC CCTCCCATG GCTTTGGCCA GGCCAGACAC 1200
 35 TTCACATCGT TTACATGGTT CTGTGTAATT TTAAAGTTA TGTGTATAAA GCGAAGCTGT 1260
 TTCTGTGAAA CTGTATATTT TGTAAATAAA TATATTGCTA CTTTGAGAWR AAAAAAAAAA 1320
 40 AAAAAGTCTGA GGGGGGCCCG GTACCCAA 1348

45 (2) INFORMATION FOR SEQ ID NO: 248:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1766 base pairs
 (B) TYPE: nucleic acid
 50 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 248:

55 GTGCCGAATC GGCAGAGCGG CACGAGCGGC CACGAGAGCA GGCGGAGTAA AGGGACTTGA 60
 GCGAGCCAGT TGCCGGATTA TTCTATTTCC CCTCCCTCTC TCCCGCCCCG TATCTCTTTT 120
 60 CACCCTTCTC CCACCCTCGC TCGCGTASCA TGGCGGAGCG TCGCGGCCA CTCAGTCCCA 180

	TTCCATCTCC TCGTCGTCCT TCGGAGCCGA GCCGTCCGCG CCCGGCGGCG GCGGGAGCCC	240
	AGGAGCCTGC CCCGCCCTGG GGACGAAGAG CTGCAGCTCC TCCTGTGCGG TGCACGATCT	300
5	GATTTTCTGG AGAGATGTGA AGAAGACTGG GTTTGTCTTT GGCACCACGC TGATCATGCT	360
	GCTTTCCTG GCAGCTTTCA GTGTCATCAG TGTGGTTTCT TACCTCATCC TGGCTCTTCT	420
10	CTCTGTCACC ATCAGCTTCA GGATCTACAA GTCCGTCATC CAAGCTGTAC AGAAGTCAGA	480
	AGAAGGCCAT CCATTCAAAG CCTACCTGGA CGTAGACATT ACTCTGTCCT CAGAAGCTTT	540
	CCATAATTAC ATGAATGCTG CCATGGTGCA CATCAACAGG GCCCTGAAAC TCATTATTCCG	600
15	TCTCTTTCTG GTAGAAGATC TGGTTGACTC CTTGAAGCTG GCTGTCTTCA TGTGGCTGAT	660
	GACCTATGTT GGTGCTGTTT TTAACGGAAT CACCCTTCTA ATTCTTGCTG AACTGCTCAT	720
20	TTTCAGTGTC CCGATTGTCT ATGAGAAGTA CAAGACCCAG ATTGATCACT ATGTTGGCAT	780
	CGCCCGAGAT CAGACCAAGT CAATTGTTGA AAAGATCCAA GCAAAACTCC CTGGAATCGC	840
	CAAAAAAAG GCAGAATAAG TACATGAAA CCAGAAATGC AACAGTTACT AAAACACCAT	900
25	TTAATAGTTA TAACGTCGTT ACTTGTAATA TGAAGGAAAA TACTCAGTGT CAGCTTGAGC	960
	CTGCATTCCA AGCTTTTTTT TTAATTTGGT GTTTTCTCCC ATCCTTTCCC TTTAACCCTC	1020
30	AGTATCAAGC ACAAAAATTG ATGGACTGAT AAAAGAACTA TCTTAGAACT CAGAAGAAGA	1080
	AAGAATCAAA TTCATAGGAT AAGTCAATAC CTTAATGGTG GTAGAGCCTT TACCTGTAGC	1140
	TTGAAAGGGG AAAGATTGGA GGTAAGAGAG AAAATGAAAG AACACCTCTG GGTCCCTCTG	1200
35	TCCAGTTTTC AGCACTAGTC TTAAGTCACT ATCCATTATA GTTTTGCCCT TAAGAAGTCA	1260
	TGATTAACCT ATGAAAAAAT TATTTGGGGA CAGGAGTGTG ATACCTTCCT TGGTTTTTTT	1320
40	TTGCAGCCCT CAAATCCTAT CTTCTGCCC CACAATGTGA GCAGCTACCC CTGATACTCC	1380
	TTTTCTTTAA TGATTTAACT ATCAACTTGA TAAATAACTT ATAGGTGATA GTGATAATTC	1440
	CTGATTCCAA GAATGCCATC TGATAAAAA GAATAGAAAT GGAAAGTGGG ACTGAGAGGG	1500
45	AGTCAGCAGG CATGCTGCGG TGGCGGTCAC TCCCTCTGCC ACTATCCCCA GGAAGGAAA	1560
	RGCTCCGCCA TTTGGGAAAG TGGTTTCTAC GTCAGTGGAC ACCGGTCTG AGCATTAGTT	1620
50	TGAGAACTCG TTCCCGAATG TGCTTTCCTC CCTCTCCCCT GCCCACCTCA AGTTTAATAA	1680
	ATAAGGTTGT ACTTTTCTTA CTATAAAATA AAAAAAAAAA AACTCGAGGG GGGCCCGGTA	1740
	CCCAAATCGC CGGATATGAT CGTAAA	1766
55		

(2) INFORMATION FOR SEQ ID NO: 249:

60 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2664 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

5

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 249:

	AGTGTCTCTCG GAGCAGGCGG AGTAAAGGGA CTGAGCGAG CCAGTTGCCG GATTATCTTA	60
10	TTTCCCCTCC CTCTCTCCCG CCCCGTATCT CTTTTCACCC TTCTCCCACC CTCGCTCGCG	120
	TASCATGGCG GAGCGTCGGC GCCACTCAG TCCCATTCCA TCTCCTCGTC GTCCTTCGGA	180
15	GCCGAGCCGT CCGCGCCCGG CGGCGGCGG AGCCCAGGAG CCTGCCCCGC CCTGGGGACG	240
	AAGAGCTGCA GCTCCTCCTG TCGGTGCAC GATCTGATTT TCTGGAGAGA TGTGAAGAAG	300
	ACTGGGTMTG TCTTTGGCAC CACGCTGATC ATGCTGCTTT CCCTGGCAGC TTTCAGTGTC	360
20	ATCAGTGTGG TTTCTTACCT CATCCTGGCT CTCTCTCTG TCACCATCAG CTTCAGGATC	420
	TACAAGTCCG TCATCCAAGC TGTACAGAAG TCAGAAGAAG GCCATCCATT CAAAGCCTAC	480
25	CTGGACGTAG ACATTACTCT GTCTCAGAA GCTTTCCATA ATTACATGAA TGCTGCCATG	540
	GTGCACATCA ACAGGGCCCT GAAACTCATT ATTCGCTCTT TTCTGGTAGA AGATCTGGTT	600
	GACTCCTTGA AGCTGGCTGT CTTCATGTGG CTGATGACCT ATGTTGGTGC TGTPTTTAAC	660
30	GGAATCACCC TTCTAATTTCT TGCTGAACTG CTCATTTTCA GTGTCCCGAT TGTCTATGAG	720
	AAGTACAAGA CCCAGATTGA TCACTATGTT GGCATCGCCC GAGATCAGAC CAAGTCAATT	780
35	GTGAAAAGA TCCAAGCAAA ACTCCCTGGA ATCGCCAAAA AAAAGGCAGA ATAAGTACAT	840
	GGAAACCAGA AATGCAACAG TTAATAAAAC ACCATTTAAT AGTTATAACG TCGTTACTTG	900
	TACTATGAAG GAAAATACTC AGTGTGAGCT TGAGCCTGCA TTCCAAGCTT TTTTPTTAAT	960
40	TTGGTGTPTT CTCCATCCT TTCCCTTTAA CCCTCAGTAT CAAGCACAAA AATTGATGGA	1020
	CTGATAAAAG AACTATCTTA GAACTCAGAA GAAGAAAGAA TCAAATTCAT AGGATAAGTC	1080
45	AATACCTTAA TGGTGGTAGA GCCTTTACCT GTAGCTTGAA AGGGGAAAGA TTGGAGGTAA	1140
	GAGAGAAAAT GAAAGAACAC CTCTGGGTCC TTCTGTCCAG TTTTCAGCAC TAGTCTTACT	1200
	CAGCTATCCA TTATAGTTTT GCCCTTAAGA AGTCATGATT AACTTATGAA AAAATTATTT	1260
50	GGGGACAGGA GTGTGATACC TTCTTTGGTT TTTTPTTGCA GCCCTCAAAT CCTATCTTCC	1320
	TGCCCCACAA TGTGAGCAGC TACCCCTGAT ACTCCTTTTC TTTAATGATT TAACTATCAA	1380
55	CTTGATAAAT AACTTATAGG TGATAGTGAT AATTCCTGAT TCCAAGAATG CCATCTGATA	1440
	AAAAAGAATA GAAATGGAAA GTGGGACTGA GAGGGAGTCA GCAGGCATGC TCGGTGGCG	1500
	GTCACTCCCT CTGCCACTAT CCCAGGGAA GGAAARGCTC CGCCATTTGG GAAAGTGTT	1560
60	TCTACGTCAC TGGACACCGG TTCTGAGCAT TAGTTTGAGA ACTCGTTCCC GAATGTGCTT	1620

	TCCTCCCTCT CCCCTGCCCA CCTCAAGTTT AATAAATAAG GTTGTACTTT TCTTACTATA	1680
5	AAATAAATGT CTGTAAGTGC TGTGCACTGC TGTAAACTTG TTAGAGAAAA AAATAACCTG	1740
	CATGTGGGCT CCTCAGTTAT TGAGTTTTTG TGATCCTATC TCAGTCTGGG GGGGAACATT	1800
	CTCAAGAGGT GAAATACAGA AAGCCTTTTT TTCTTGATCT TTTCCTCGAGA TTCAAATCTC	1860
10	CGATTCCCAT TTGGGGGCAA GTTTTTTTCT TCACCTTCAA TATGAGAATT CAGCGAACTT	1920
	GAAAGAAAA TCATCTGTGA GTTCCTTCAG GTTCTCACTC ATAGTCATGA TCCTTCAGAG	1980
15	GGAATATGCA CTGGCGAGTT TAAAGTAAGG GCTATGATAT TTGATGGTCC CAAAGTACCG	2040
	CAGCTGCAAA AAGTAGTGA AGGAAATTGT CTACGTGTCT TGGAAAAATT AGTTAGGAAT	2100
	TTGGATGGGT AAAAGGTACC CTTCCTTAC TCCATCTTAT TTTCTTAGCC CCCTTTGAGT	2160
20	GTTTTAACTG GTTTCATGTC CTAGTAGGAA GTGCATTCTC CATCCTCATC CTCTGCCCTC	2220
	CCAGGAAGTC AGTGATTGTC TTTTGGGCT TCCCCTCCAA AGGACCTTCT GCAGTGAAG	2280
25	TGCCACATCC AGTTCPTTC TTTTGTGCT GCTGTGTTA GATAATTGAA GAGATCTTTG	2340
	TGCCACACAG GATTTTTTTT TTTTTTAAGA AAAACCTATA GATGAAAAAT TACTAATGAA	2400
	ACTGTGTGTA CGTGTCTGTG CGTGCAACAT AAAAATACAG TAGCACCTAA GGAGCTTGAA	2460
30	TCTTGGTTCC TGTAAAATTT CAAATGATG TGGTATTAAT AAAAAAAAA AAAACAMAAA	2520
	AAAAAAAAA AAAAGGGCGG CCGCTCTAGA GGATCCAAGC TTACGTACGC GTGCATGCGA	2580
35	CGTCCATAGC TCTTTCTATA GGGTCCCCC AAATTCATT CANCGGCGC TCGGTTTTAN	2640
	AAAGGTCGTG ANTGGGGGAA ANCC	2664

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(2) INFORMATION FOR SEQ ID NO: 250:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 865 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 250:

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	CGTGGGAGTG AGGTACCAGA TTCAGCCCAT TTGGCCCCGA CGCCTCTKTT CTCGGAATCC	60
	GGGTGCTGCG GATTGAGGTC CCGGTCCTA ACGGTGGGAT CCGTGTCTC GGGATGAGAT	120
55	TTGGCGTTTC CTCGGGCTT TGGTGGGATC GGTGTCTCA GGATGAGATT TAGGGTTTCC	180
	TCGGGGCTTT CGGGATCTC ACCTAATATC CGACTGCAA GATGGAGGAA GCGGGGAACC	240
60	TAGGAGGCCT GATTAAATG GTCCATCTAC TGGTCTGTG AGGTGCCTGG GGCATGCAAA	300

TGTGGGTGAC CTTCTGCTCA GGCTTCCTGC TTTTCCGAAG CCTTCCCCGA CATACTTTCG 360
 GACTAGTGCA GAGCAAATC TTCCCTTCT ACTTCCACAT CTCCATGGGC TGTGCCTTCA 420
 5 TCAACCTCTG CATCTTGGCT TCACAGCATG CTGGGGCTCA GCTCACATTC TGGGAGGCCA 480
 GCCAGCTTTA CCTGCTGTTC CTGAGCCTTA CGCTGGCCAC TGTCAACGCC CGCTGGCTGG 540
 10 AACCCCGCAC CACAGCTGCC ATGTGGGCCC TGCAAACCGT GGAGAAGGAG CGAGGCCTGG 600
 GTGGGGAGGT ACCAGGCAGC CACGAGGTC CCGATCCCTA CCGCCAGCTG CGAGAGAAGG 660
 ACCCCAAGTA CAGTGTCTTC CGCCAGAATT TCTTCCGCTA CCATGGGCTG TCCTCTCTTT 720
 15 GCAATCTGGG CTGCTCCTG AGCAATGGG TCTGTCTCGC TGGCCTTGCC CTGGAAATAA 780
 CGAGCTCTA GCATGGGCCC TGCATGCTAA TAAATGCTTC TTCAGAAAAA AAAAAAAAAA 840
 20 AAACTCGAGG GGGGCCCGGT ACCCA 865

25 (2) INFORMATION FOR SEQ ID NO: 251:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2082 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 251:

35 TGGGGGGG AATGGGTGTC TGGCTCANGG ATTGCCNAAT CTGGAAATTC TCCATAACTT 60
 GCTAGCTTGT TTTTTTTTTT TTTTITTACA CCCCCCGCC CCACCCCGG ACTTGCACAA 120
 TGTCAATGA TCTCAGCAGA GTTCTTCATG TGAAACGTTG ATCACCTTTG AACCTGCAT 180
 40 CATTCACATA TTTTTCCTTC TTCTTCCCT TCAGTTCATG AACTGGTGT CATTTTCTGT 240
 GTGTGTGTGT GTTTTATTTT GTTTGGATTT TTTTITTAA TTTTACTTT AGAGCTTGCT 300
 GTGTGCCCCA CCTTTTTTCC AACCTCCACC CTCACTCCTT CTCAACCCAT CTCTTCCGAG 360
 45 ATGAAAGAAA AAAAAAGCA AAGTTTTTTT TTCTTCTCCT GAGTTCCTCA TGTGAGATTG 420
 AGCTTGCAA GGAAAAAAA ATGTGAAATG TTATAGACTT GCAGCGTGCC GAGTTCCATC 480
 50 GGGTTTTTTT TTTAGCATTG TTATGCTAAA ATAGAGAAAA AAATGCTCAT GAACCTTCCA 540
 CAATCAAGCC TGCATCAACC TTCTGGGTGT GACTTGTGAG TTTTGGCCTT GTGATGCCAA 600
 ATCTGAGAGT TTAGTCTGCC ATTAAAAAAA CTCATTCTCA TCTCATGCAT TATTATGCTT 660
 55 GCTACTTTGT CTTAGCAACA ATGAACTATA ACTGTTTCAA AGACTTTATG GAAAAGAGAC 720
 ATTATATTAA TAAAAAAA AAGCCTGCAT GCTGGACATG TATGGTATAA TTATTTTTTC 780
 60 CTTTTTTTTT CCTTTTGGCT TGGAAATGGA CGTTCGAAGA CTTATAGCAT GGCATTCTA 840

CTTTGTGTTTT ATTGCCTCAT GACTTTTTTGT AGTTTAGAAC AAAACAGTGC AACCGTAGAG 900
 CCTTCMTCCC ATGAAATTTT GCATCTGCTC CAAAACAGCT TTGAGTTACT CAGAACTTCA 960
 5 ACCTCCCAAT GCACTGAAGG CATTCCTTGT GCAAAGATAC CAGAAATGGGT TACACATTTA 1020
 ACCTGGCAAA CATTGAAGAA CTCTTRATGT TTTCTTTTTA ATAAGAATGA CGCCCCACTT 1080
 10 TGGGGACTAA AATTGTGCTA TTGCCGAGAA GCAGTCTAAA ATTTATTTTTT TAAAAAGAGA 1140
 AACTGCCCCA TTATTTTTGG TTTGTTTTAT TTTTATTTTA TATTTTTTGG CTTTGGTCA 1200
 TTGTCAAATG TGGAATGCTC TGGGTTTCTA GTATATAATT TAATTCTAGT TTTTATAATC 1260
 15 TGTAGGCCCA GTTAAAATGT ATGCTACAGA TAAAGGAATG TTATAGATAA ATTTGAAAGA 1320
 GTTAGGTCTG TTTAGCTGTA GATTTTTTAA ACGATTGATG CACTAAATTG TTTACTATTG 1380
 20 TGATGTTAAG GGGGTAGAG TTTGCAAGGG GACTGTTTTA AAAAAGTAGC TTATACAGCA 1440
 TGTGCTTGCA ACTTAAATAT AAGTTGGGTA TGTGTAGTCT TTGCTATACC ACTGACTGTA 1500
 TTGAAAACCA AAGTATTAAG AGGGGAAACG CCCCTGTTTA TATCTGTAGG GGTATTTTAC 1560
 25 ATTCAAAAAT GTATGTTTTT TTTTCTTTTC AAAATTAAAG TATTTGGGAC TGAATTGCAC 1620
 TAAGATATAA CCTGCAAGCA TATAATACAA AAAAAAATG CAAAACGTT TAGAACGCTA 1680
 30 ATAAAATTTA TGCAGTTATA AAAATGGCAT TACTGCACAG TTTTAAGATG ATGCAGATTT 1740
 TTTTACAGTT GTATGTGGT GCAGAACTGG ATTTTCTGTA ACTTAAAAA AAATCCACAG 1800
 TTTTAAAGGC AATAATCAGT AAATGTTATT TTCAGGGACT GACATCCTGT CTTTAAAAAG 1860
 35 AAATGAAAAG TAAATCTTAC CACAATAAAT ATAAAAAAT CTGTGAGTT ACTTTTCTTT 1920
 TACATATTTT GCTGTGCAAA ATTGTTTTAT ATCTGAGTT ACTAACTAAC CACGCGTGT 1980
 40 GTTCCTATGT GCTTTCTTTT CATTTTCAAT TCTGGTTATA TCAAGAAAAG AATAATCTAC 2040
 AATAATAAAC GGCATTTTTT TTTGAAAAA AAAAAAAAAA AA 2082

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(2) INFORMATION FOR SEQ ID NO: 252:

50 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1482 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 252:

CAGGCAGGCT GGCCCCGGG ACTTCTCTCT GGCCCTGCTC CCTCCGAGCG CTCGCCGTT 60
 60 GCCCCCTGG CCCCTACGGA GTCCTTAGCC AGGATGGAGG CTGTTGTGAA CTGTACCAA 120

GAGGTGATGA AGCACGCAGA TCCCCGATC CAGGGCTACC CTCTGATGGG GTCCCCCTTG 180
CTAATGACCT CCATTCTCCT GACCTACGTG TACTTCGTTT TCTCACTTGG GCCTCGCATC 240
5 ATGGCTAATC GGAAGCCCTT CCAGCTCCGT GGCTTCATGA TTGTCTACAA CTCTCTACTG 300
GTGGCACTCT CCTCTACAT TGCTATGAG TTCTGATGT CGGGCTGGCT GAGCACCTAT 360
10 ACCTGGCGCT GTGACCCTGT GGACTATTCC AACAGCCCTG AGGCACTTAG GATGGTTCCG 420
GTGGCCTGGC TCTTCCTCTT CTCCAAGTTC ATTGAGCTGA TGGACACAGT GATCTTTATT 480
CTCCGAAAGA AAGACGGGCA GGTGACCTTC CTACATGTCT TCCATCACTC TGTGCTTCCC 540
15 TGGAGCTGGT GGTGGGGGGT AAAGATTGCC CCGGGAGGAA TGGGCTCTTT CCATGCCATG 600
ATAAACTCTT CCGTGCATGT CATAATGTAC CTGTACTACG GATTATCTGC CTTTGGCCCT 660
20 GTGGCACAAC CCTACCTTTG GTGAAAAAG CACATGACAG CCATTACAGT GATCCAGTTT 720
GTCTTGGTCT CACTGCACAT CTCCAGTAC TACTTTATGT CCAGCTGTAA CTACCAGTAC 780
CCAGTCATTA TTCACCTCAT CTGGATGTAT GGCACCATCT TCTTCATGCT GTTCTCCAAC 840
25 TTCTGGTATC ACTCTTATAC CAAGGGCAAG CGGCTGCCCC GTGCACTTCA GCAAAATGGA 900
GCTCCAGGTA TTGCCAAGGT CAAGGCCAAC TGAGAAGCAT GGCCTAGATA GCGCGCCACC 960
30 TAAGTGCCTC AGGACTGCAC CTTAGGGCAG TGTCCGTCAG TGCCCTCTCC ACCTACACCT 1020
GTGACCAAGG CTTATGTGGT CAGGACTGAG CAGGGGACTG GCCCTCCCTT CCCCACAGCT 1080
GCTCTACAGG GACCACGGCT TTGGTTCTTC ACCCACTTCC CCGGGGCAGC TCCAGGGATG 1140
35 TGGCCTCATT GCTGTCTGCC ACTCCAGAGC TGGGGGCTAA AAGGGCTGTA CAGTTATTTT 1200
CCCTCCCTG CCTTAAACT TGGGAGAGGA GCACTCAGGG CTGGCCCCAC AAAGGGTCTC 1260
40 GTGGCCTTTT TCCTCACACA GAAGAGGTCA GCAATAATGT CACTGTGGAC CCAGTCTCAC 1320
TCTCCACCC CACACACTGA AGCAGTAGCT TCTGGGCCAA AGGTCAGGGT GGGCGGGGGC 1380
CTGGGAATAC AGCCTGTGGA GGCTGCTTAC TCAACTTGTG TCTTAATTAA AAGTGACAGA 1440
45 GGAAACCAAA AAAAAAAAAA AAAAATCTGA GGGGGGCCCC TA 1482

50 (2) INFORMATION FOR SEQ ID NO: 253:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 834 base pairs

(B) TYPE: nucleic acid

55 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 253:

60 GGCACGAGCG CCGTTGCCCG CCTGGCCCTT ACGGAGTCTT TAGCCAGGAT GGAGGCTGTT 60

GTGAACCTTGT ACCAAGAGGT GATGAAGCAC GCAGATCCCC GGATCCAGGG CTACCCTCTG 120
 ATGGGGTCCC CCTTGCTAAT GACCTCCATT CTCCTGACCT ACGTGTACTT CGTTCTCTCA 180
 5 CTTGGGCCTC GCATCATGGC TAATCGGAAG CCCTTCCAGC TCCGTGGCTT CATGATTGTC 240
 TACAACCTTCT CACTGGTGGC ACTCTCCCTC TACATTGTCT ATGAGTTCCT GATGTGGGGC 300
 10 TGGCTGAGCA CCTATACCTG GCGCTGTGAC CCTCAGGACT GCACCTTAGG GCAGTGTCCG 360
 TCAGTCCCCT CTCCAMCTAC ACCTGTGACC AAGGCTTATG TGGTCAGGAC TGAGCAGGGG 420
 ACTGGCCCTC CCCTCCCCAC AGCTGCTCTA CAGGGACCAC GGCTTTGGTT CCTCACCAC 480
 15 TTCCCCGGG CAGCTCCAGG GATGTGGCCT CATGTCTGTC TGCCACTCCA GAGCTGGGGG 540
 CTAAAAGGGC TGTACAGTTA TTTCCCCCTC CTTGCCTTAA AACTTGGGAG AGGAGCACTC 600
 20 AGGGCTGGCC CCACAAAGGG TCTCGTGGCC TTTTTCCTCA CACAGAAGAG GTCAGCAATA 660
 ATGTCACCTG GGACCCAGTC TCACTCCTCC ACCCCACACA CTGAAGCAGT AGCTTCTGGG 720
 CCAAAGGTCA GGGTGGGCGG GGGCCTGGGA ATACAGCCTG TGGAGGCTGC TTACTCAACT 780
 25 TGTGTCTTAA TTAAAAGTGA CAGAGGAAAC CACGAAAAAA AAAAAAAAAA AAAA 834

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(2) INFORMATION FOR SEQ ID NO: 254:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 1508 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 254:

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TTGAACTTTT AAAATTTTAG ATCAGCAAAC TCTAAGATCC TAGAATGGAA GCTGTTCTCTC 60
 ATTTCTCCAT GCTCACCCTC CCAGGTCAGC GAGATGGTGA AGAAGCTGCA CGCGGCAACA 120
 45 CCACCAACGT TCGGAGTGGG CCTCATCAAT GAGCTTGTGG AGAACTTTGG CAGATGTCCC 180
 AAGTGGTCTG GTCGGCAAGC CTTTGTCTTT GTCTGCCAGA CTGTCATTGA GGATGACTGC 240
 CTTCCCATGG ACCAGTTTGC TGTGCATCTC ATGCCGCATC TGCTAACCTT AGCAAATGAC 300
 50 AGGGTTCTTA ACGTGGGAGT GCTGCTTGCA AAGACAATTAA GACAAACTCT ACTAGAAAAA 360
 GACTATTTCT TGGCCTCTGC CAGCTGCCAC CAGGAGGCTG TGGAGCAGAC CATCATGGCT 420
 55 CTTCAGATGG ACCGTGACAG CGATGTCAAG TATTTTGCAA GCATCCACCC TGCCAGTACC 480
 AAAATCTCCG AAGATGCCAT GAGCACAGCG TCCTCAACCT ACTAGAAGGC TTGAATCTCG 540
 60 GTGTCTTTCC TGCTTCCATG AGAGCCGAGG TTCAGTGGGC ATTGCCACG CATGTGACCT 600

	GGGATAGCTT TCGGGGAGG AGAGACCTTC CTCTCCTGCG GACTTCATTC CAGGTGCAAG	660
	TTGCCTACAC CCAATACCAG GGATTTCAG AGTCAAGAGA AAGTACAGTA AACACTATTA	720
5	TCTTATCTTG ACTTTAAGGG GAAATAATTT CTCAGAGGAT TATAATTGTC ACCGAAGCCT	780
	TAAATCCTTC TGTCTTCCTG ACTGAATGAA ACTTGAATTG GCAGAGCATT TTCCTTATGG	840
10	AAGGGATGAG ATTCCCAGAG ACCTGCATTC CTTTCTCCTG GTTTTATTTA ACAATCGACA	900
	AATGAAATTC TTACAGCCTG AAGGCAGACG TGTGCCCAGA TGTGAAAGAG ACCTTCAGTA	960
	TCAGCCCTAA CTCTTCTCTC CCAGGAAGGA CTGCTGGGC TCTGTGGCCA GCTGTCCAGC	1020
15	CCAGCCCTGT GTGTGAATCG TTTGTGACGT GTGCAAATGG GAAAGGAGGG GTTTTTACAT	1080
	CTCCTAAAGG ACCTGATGCC AACACAAGTA GGATTGACTT AAACCTTTAA GCGCAGCATA	1140
20	TTGCTGTACA CATTTACAGA ATGGTTGCTG AGTGTCTGTG TCTGATTTTT TCATGCTGGT	1200
	CATGACCTGA AGGAAATTTA TTAGACGTAT AATGTATGTC TGGTGTTTTT AACTTGATCA	1260
	TGATCAGCTC TGAGGTGCAA CTTCTTCACA TACTGTACAT ACCTGTGACC ACTCTTGGGA	1320
25	GTGCTGCAGT CTTTAATCAT GCTGTTTAAA CTGTTGTGGC ACAAGTTCTC TTGTCCAAAT	1380
	AAAATTTATT AATAAGATCT ATAGAGAGAG ATATATACAC TTTTGATTGT TTTCTAGATG	1440
30	TCTACCAATA AATGCAATTT GTGACCTGTA TTAAAAAAA NTAAAAAAC TCGAGGGGGG	1500
	CCCGGTAC	1508

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(2) INFORMATION FOR SEQ ID NO: 255:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 2514 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 255:

	GAGAGACTCA CACTTCTTTT CCATTATCAC TGACGATGTA GTGGACATAG CAGGGGAAGA	60
	GCACCTACCT GTGTTGGTGA GGTTTGTTGA TGAATCTCAT AACCTAAGAG AGGAATTTAT	120
50	AGGCTTCCTG CCTTATGAAG CCGATGCAGA AATTTTGGCT GTGAAATTTT AACTATGAT	180
	AACTGAGAAG TGGGGATTAA ATATGGAGTA TTGTCGTGGC CAGGCTTACA TTGWCTCTAG	240
55	TGGATTTTCT TCCAAAATGA AAGTTGTTGC TTCTAGACTT TTAGAGAAAT ATCCCAAGC	300
	TATCTACACA CTCTGCTCTT CCTGTGCCCT AAATATGTGG TTGGCAAAT CAGTACCTGT	360
	TATGGGAGTA TCTGTGCAT TAGGAACAAT TGAGGAAGTT TGTTCTTTTT TCCATCGATC	420
60	ACCACAACCTG CTTTGTAGAAC TTGACAACGT AATTTCTGTT CTTTTCAGTA ACAGTAAAGA	480

	AAGGGGTAAA GAACTGAAGG AAATCTGCCA TTCTCAGTGG ACAGGCAGGC ATGATGCTTT	540
5	TGAAATTTTA GTGGAACCTC TGCAAGCACT TGTTTTATGT TTAGATGGTA TAAATAGTGA	600
	CACAAATATT AGATGGAATA ACTATATAGC TGGCCGAGCA TTTGTACTCT GCAGTGCAGT	660
	GTCAGATTTT GATTTCATTG TTAATATTGT TGTTCTTAAA AATGTCCTAT CTTTTACAAG	720
10	AGCCTTTGGG AAAAACCTCC AGGGGCAAAC CTCTGATGTC TTCTTTGCGG CCGGTAGCTT	780
	GACTGCAGTA CTGCATTCAC TCAACGAAGT GATTGGAAAA TATTGAAGTT TATCATGAAT	840
15	TTTGGTTTGA GGAAGCCACA AATTTGGCAA CCAAACTTGA TATTCAAATG AAATCCCTG	900
	GGAAATCCG CAGAGCTCAC CAGGGTAACT TGAATCTCA GCTAACCTCT GAGAGTTACT	960
	ATAAGAAAC CCTAAGTGT CCAACAGTGG AGCACATTAT TCAGGAACTT AAAGATATAT	1020
20	TCTCAGAACA GCACCTCAA GCTCTTAAAT GCTTATCTCT GGTACCCTCA GTCATGGGAC	1080
	AACTCAAATT CAATACGTCG GAGGAACACC ATGCTGACAT GTATAGAAGT GACTTACCCA	1140
25	ATCCTGACAC GCTGTCAGCT GAGCTTCATT GTTGAGAAT CAAATGGAAA CACAGGGGGA	1200
	AAGATATAGA GCTTCCGTCC ACCATCTATG AAGCCCTCCA CCTGCCTGAC ATCAAGTTT	1260
	TTCTTAATGT GTATGCATTG CTGAAGGTCC TGTGTATTCT TCCTGTGATG AAGGTTGAGA	1320
30	ATGAGCGGTA TGAAAATGGA CGAAAGCGTC TTAAAGCATA TTTGAGGAAC ACTTTGACAG	1380
	ACCAAAGGTC AAGTAACTTG GCTTTGCTTA ACATAAAATT TGATATAAAA CACGACCTGG	1440
35	ATTTAATGGT GGACACATAT ATTAACTCT ATACAAGTAA GTCAGAGCTT CCTACAGATA	1500
	ATTCCGAAAC TGTGGAAAT ACCTAAGAGA CTTTTAAAA TAGGCTTTCT TATATTTGAT	1560
	ATTTGAAGA AAAAGCCGTA AGTGTATGTA GACCACTTAA TCACTAAATA TCTTTGCCIA	1620
40	TAGGACTCCA TTGAATACAT TAGCCATTGA TAATCTACCT GTTTAAATGG CCCCTGTTTG	1680
	AACTCTCAAG CTTTGAAGAC CTACCTGPTC TTCCAGAAGA GAACGTTGAA AGTGCCATGT	1740
45	TTCTTTTTCG GTGATCTCTG TTGATGGCAC TCTGGAATG TTTCAAGTAA GTCATTTTAG	1800
	ACATAGCATT TATTATCACT GTGGATCTCT ACTGTGTTGG TGTATGAAT TCTTTGAAGA	1860
	AATATATTTT GAAGAGGTGT GGGAGGAAGG AATACATTTT ATAAAAIGTT GTAGTGAAGC	1920
50	CCACAATTGA CCTTTGACTA ATAGGAGTTT TAAGTATGTT AAAAATCTAT ACTGGACAGT	1980
	TACAAGAAAT TACCGGAGAA AAGCTTGTGA GCTCACCAAA CAAGGATTTT AGTGTAGATT	2040
55	TTGTCTTTCT TGAACCTAAA GAAACAAATG ACAAAGTTTG AATGGAAAAG CCTGCTGTTG	2100
	TTCCACATCT CGTTGCTGTT TACATTCCTT TGTGGAGCCT ACATCTTCCT AAGCTTTTIA	2160
	GCAGGTATAT GTTGAACACT TCTGTTTCAT GGTGAGACA GAATCAGAGG CCATGGATAC	2220
60	TGACAACTGA TTTGTCTGTT TTTTCTCTCT GTCTTTTCC ATGACTCTTA TATACTGCCT	2280

CATCTTGATT TATAAGCAAA ACCTGGAAAA CCTACAAAAT AAGTGTGTG GTTTATCTAG 2340
 5 AAAAATATGG AAAATATTGC TGTATTTTTT GGTGAAGAAA ATCAATTTTG TATAGTTTAT 2400
 TTCAATCTAA ATAAATGTG AATTTGTITT AAAGCTTAGG CACATTATTT TTTGTGGGGT 2460
 CAAAACATTC TTGTGTAAAT TCTCTTAAAC ATTTGATAAA CAGCTTCACA ATTC 2514

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(2) INFORMATION FOR SEQ ID NO: 256:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2357 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 256:

CTGCCTTATG AAGCCGATGC AGAAATTTTG GCTGTGAAAT TTCACACTAT GATAACTGAG 60
 25 AAGTGGGGAT TAAATATGGA GTATTGTCGT GGCCAGGCTT ACATTGTCTC TAGTGGATT 120
 TCTTCCAAAA TGAAAGTTGT TGCTTCTAGA CTTTTAGAGA AATATCCCA AGCTATCTAC 180
 AACTCTGCT CTTCCTGTGC CTTAAATATG TGGTTGGCAA AATCAGTACC TGTATGGGA 240
 30 GTATCTGTTG CATTAGGAAC AATTGAGGAA GTTGTTCIT TTTTCCATCG ATCACCACAA 300
 CTGCTTTTAG AACTTGACAA CGTAATTYCT GTTCTTTTTC AGAACAGTAA AGAAAGGGT 360
 35 AAAGAAGTGA AGGAAATCTG CCATTCTCAG TGGACAGGCA GGCATGATGC TTTTGAAATT 420
 TTAGTGGAAC TCCTGCAAGC ACTTGTTTTA TGTTAGATG GTATAAATAG TGACACAAAT 480
 ATTAGATGGA ATAACTATAT AGCTGGCCGA GCATTTGTAC TCTGCAGTGC AGTGTGAGAT 540
 40 TTTGATTTCA TTGTTACTAT TGTGTTCIT AAAAATGTCC TATCTTTTAC AAGAGCCTTT 600
 GGGAAAACC TCCAGGGGCA AACCTCTGAT GTCTTCTTTG CGGCCGGTAG CTGACTGCA 660
 45 GTACTGCATT CACTCAACGA AGTGANTGGA AAATATTGAA GTTATCATG AATTTTGTT 720
 TGAGGAAGCC ACAAATTTGG CAACCAAACT TGATATTCAA ATGAAACTCC CTGGGAAATT 780
 CCGCAGAGCT CACCAGGGTA ACTTGAATC TCAGCTAACC TCTGAGAGTT ACTATAAAGA 840
 50 AACCTAAGT GTCCCAACAG TGGAGCACAT TATTCAGGAA CTTAAAGATA TATTCTCAGA 900
 ACAGCACCTC AAAGCTCTTA AATGCTTATC TCTGGTACCC TCAGTCATGG GACAACTCAA 960
 55 ATTCAATACG TCGGAGGAAC ACCATGCTGA CATGTATAGA AGTGACTTAC CCAATCCTGA 1020
 CACGCTGTCA GCTGAGCTTC ATTGTGGAG AATCAAATGG AAACACAGGG GGAAAGATAT 1080
 60 AGAGCTTCCG TCCACCATCT ATGAAGCCCT CCACCTGCCT GACATCAAGT TTTTTCCTAA 1140

	TTGTTATGCA TTGCTGAAGG TCCTGTGTAT TCTTCCTGTG ATGAAGGTTG AGAATGAGCG	1200
	GTATGAAAAT GGACGAAAGC GTCTTAAAGC ATATTTTGAGG AACACTTTGA CAGACCAAAG	1260
5	GTCAAGTAAC TTGGCTTTGC TTAACATAAA TTTTGATATA AAACACGACC TGGATTTAAT	1320
	GGTGGACACA TATATTAAAC TCTATACAAG TAAGTCAGAG CTTCTACAG ATAATTCCGA	1380
10	AACTGTGGAA AATACCTAAG AGACTTTTAA AAATAGGCTT TCTTATATTT GATATTTGGA	1440
	AGAAAAAGCC GTAAGTGTAT GTAGACCACT TAATCACTAA ATATCTTTGC CTATAGGACT	1500
	CCATTGAATA CATTAGCCAT TGATAATCTA CCTGTTTAAA TGGCCCCTGT TTGAACCTC	1560
15	AAGCTTTGAA GACCTACCTG TTCTTCCAGA AGAGAACGTT GAAAGTGCCA TGTTCCTTT	1620
	TGCGTGATCT CTGTTGATGG CACTCTGGAA TTGTTTCAGT TAAGTCATTT TAGACATAGC	1680
20	ATTTATATATC ACTGTGGATC TCTACTTGTT GGGTGTATG AATTCCTTGA AGAAATATAT	1740
	TTTGAAGAGG TGTGGGAGGA AGGAATACAT TTTATAAAAT GTTGTAGTGA AGCCCAAT	1800
	TGACCTTTGA CTAATAGGAG TTTTAAGTAT GTTAAAAATC TATACTGGAC AGTTACAAGA	1860
25	AATTACCGGA GAAAAGCTTG TGAGCTCACC AAACAAGGAT TTCAGTGTAG ATTTGTCTT	1920
	TCTTGAACCTT AAAGAAACAA ATGACAAAGT TTGAATGGAA AAGCCTGCTG TTGTTCCACA	1980
30	TCTCGTGTCT GTTTACATTC CTTTGTGGAG CCTACATCTT CCTAAGCTTT TTAGCAGGTA	2040
	TATGTTGAAC ACTTCTGTTT CATGGTGTAG ACAGAATCAG AGGCCATGGA TACTGACAAC	2100
	TGATTTGTCT GTTTTTTTTC TCTGTCTTTT TCCATGACTC TTATATACTG CCTCATCTTG	2160
35	ATTTATAAGC AAAACCTGGA AAACCTACAA AATAAGTGTT GTGGTTTATC TAGAAAAATA	2220
	TGGAAAAATAT TGCTGTTATT TTTGGTGAAG AAAATCAATT TTGTATAGTT TATTTCAATC	2280
40	TAAATAAAAT GTGAATTTTG TTTAAAGCTT AGGCACATTA TTTTGTGG GGTCAAAACA	2340
	TTCTTGTGTA AATTCTC	2357

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(2) INFORMATION FOR SEQ ID NO: 257:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 689 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 257:

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ACTTTCTGGT GCAAAAAGAT GTTCAAGCCT TATTTTATAC TTGCCTGCCC CTTTCTCTTT	60
CATTTATTTGG AGTGAGCTGC AGCTCTAAGA AGACCTGTTT TTTTGAATGG AGAGTAGCAT	120
60 CAGGAACCAG GATGTGGGTG CGAGGCGTGC TCCTGGCTGT TGCAGATTGC TGCACCCGGG	180

AGCTCTTAGT GGACAGAGCT AGAGGATATG TGCACGTACT TCCATCTCTC TCTCTGTCTC 240
 CGATTTTAGC CCAGCACCAC AGGGTACGTT CCAGTTTTTC TCTCTTTCCA TAGCTGTAAG 300
 5 GCCCTTTCTG GGAATGGTTC TCATTCTCCT TAATCTATTA TTGGGTCAGT TTTCTGTCAT 360
 GTCCCCAGCC TCCCATCACT GCCACCCACT CCCCACAGAG ATGCCCTGCT CATCCGACTG 420
 10 GGGCTTTGAC TCCCACACTG TGTACCCCTC TTGTGTGGAC GCCCTGCTGC CAAAACCTTC 480
 AGCAAACAGC TTCCAAATG GAAGTTGTCA CTGTCARGGS CTTTACAATC AGCAACAGCA 540
 AAATCTACAT GCTGCTGAGG GTCCTGCCTC ATTAAGATGC AATAAATATG TAAGTACATA 600
 15 AAAACAGCAA TAGAAGAAAC GTAATGCTTT ATTCTCAAAT ATGNATGTCT ACATAGAAAA 660
 GCCAAAATTA TTAAGAATAG TAAGGAATT 689
 20

(2) INFORMATION FOR SEQ ID NO: 258:

25 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 2377 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 30 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 258:

TCGACCCACG CGTCCGCCGA TGTGATGATT CCTGCGTATT CCAAGAACCG GGCCTATGCC 60
 35 ATCTTCTTCA TAGTCTTCAC TGTGATAGGG GACGCCCCCG GCGCTGTGCT ATCCTGTGCC 120
 GGCCACCCTT GCGTTGGTTT TGCTGCTGTA CTGGTGGCGC CCCTGACCGT GGCTGTCTCC 180
 TCTTGAAGGA AGCCTGTTC TGATGAACCT GCTGACAGCC ATCATCTACA GTCAGTTCCG 240
 40 GGGCTACCTG ATGAAATCTC TCCAGACCTC GCTGTTCGG AGGCGGGTGG GAACCCGGCT 300
 GCCTTTGAAG TCCTATCCTC CATGGTGGGG GAGGGAGGAG CCTTCCCTCA GGCAGTTGGG 360
 45 GTGAAGCCCC AGAACTTGCT GCAGGTGCTT CAGAAGGTCC AGCTGGACAG CTCCACAGA 420
 CAGGCCATGA TGGAGAAGGT GCGTTCCTAT GGCAGTGTTC TGCTCTCAGC TGAGGAGTTT 480
 CAGAAGCTCT TCAACGAGCT TGACAGAAGT GTGGTTAAAG AGCACC CGCC GAGGCCGAG 540
 50 TACCAGTCTC CGTTCTGCA GAGCGNCCCA GTTCCTCTTC GGCCACTNAC TACTTTGACT 600
 ACCTGGGGAA CCTCATCGCC CTGGCAAACC TGGTGTCCAT TTGCGTGTTC CTGGTGTG 660
 55 ATGCAGATGT TGCTGCCTGC TGAGCGTGAT GACTTCATCC TGGGGGGTCT CAACTGCGTC 720
 TTCATTGTGT ACTACCTGTT GGAGATGCTG GCTCAAGGTC TTTTGCCCTG GGGCCTGCGA 780
 60 RGGTACYKKT CCTAACCCCA RCAAMGTGTT TTGAACGGGC TCCTCAMCGT TTGTCTGGC 840

TGGWWKKGSM GATCTCAACT CTGGCTGTGT ACCGATTGCC ACACCCAGGC TGGAGGCCGG 900
 ANATGGTGGG CCTGCTGTCTG CTGTGGGACA TGACCCGCAT ACTGAACATG CTCATCGTGT 960
 5 TCCGCTTCCT GCGTATCATC CCCAGCATGA AGCCGATGGC CGTGGTGGCC AGTACCGTCC 1020
 TGGGCCCTGGT GCAAAACATG CGTGCCTTTG GCGGGATCCT GGTGGTGGTC TACTACGTAT 1080
 10 TTGCCATCAT TGGGATCAAC TTGTTTAGAG GCGTCATTTG GGCTCTTCCT GGAAACAGCA 1140
 GCCTGGCCCC TGCCAATAGG TCGGCGCCCT GTGGGAGCTT CGAGCAGCTG GAGTACTGGG 1200
 CCAACAACCTT CGATGACTTT GCGGCTGCCC TGGTCACTCT GTGGAACCTG ATGGTGGTGA 1260
 15 ACAACTGGCA GGTGTTTCTG GATGCATATC GCGCTACTA AGGCCCGTGG TCCAAGATCT 1320
 ATTTTGTATT GTGGTGGCTG GTGTCGTCTG TCATCTGGGT CAACCTGTTT CTGGCCCTGA 1380
 TTCTGGAGAA CTTCCTTCAC AAGTGGGACC CCCGCAGCCA CCTGCAGCCC CTGTCTGGGA 1440
 20 CCCCAGAGGC CACCTACCAG ATGACTGTGG AGCTCCTGTT CAGGGATATT CTGGAGGAGC 1500
 CCGGGGAGGA TGAGCTCACA GAGAGGCTGA GCCAGCACC GCACCTGTGG CTGTGCAGGT 1560
 25 GACGTCCGGG TCTGCCATCC CAGCAGGGC GGCAGGAGAG AGAGGCTGGC ATAACACAGG 1620
 TGCCCATCAT GGAAGAGGCG GCCATGCTGT GGCCAGCCAG GCAGGAAGAG ACCTTTCTCTC 1680
 TGACGGACCA CTAAGCTGGG GACAGGAACC AAGTCCTTTG CGTGTGGCCC AACAACCATT 1740
 30 TACAGAACAG CTGCTGGTGC TTCAGGGAGG CGCCGTGCCC TCCGCTTTCT TTTATAGCTG 1800
 CTTCACTGAG AATTCCCTTG TCGACTCCAC AGGGACCTTT CAGACAAAAA TGCAAGAAGC 1860
 35 AGCGGCCTCC CCTGTCCCTT GCAGCTTCCG TGGTGCCCTT GCTGCCGGCA GCCCTTGGGG 1920
 ACCACAGGCC TGACCAGGGC CTGCACAGGT TAACCGTCAG ACTTCCGGGG CATTACAGCTG 1980
 GGAATGATAC TAATACCTCC GATTTTAGCC CAGCACCACA GGTACGTTC CAGTTTPTAT 2040
 40 TTCTTTCCAT AGCTGTAAGG CCCTTTCTGG GAATGGTTAT CATTCTCCTT AATCTATTAT 2100
 TGGGTCAGTT TTCTGCATG TCCCCAGCCT CCCATCACTG CCACCCACTC CCCACAGAGA 2160
 45 TGCCCTGCTC ATCCGACTGG GGCTTTGACT CCCACACTGT GTACCCCTCT TGTGTGGACG 2220
 CCCTGTGCC AAAACCTTCA GCAAACAGCT TTCCAAATGG AAGTTGTCAC TGTACGGCC 2280
 50 TTTACAATCA GCAACAGCAA AATCTACATG CTGCTGAGGG TCCTGCCTCA TTAAGATGCA 2340
 ATAAATATGT AAGTACATAA AAAAAAAAAA AAAAAA 2377

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(2) INFORMATION FOR SEQ ID NO: 259:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1193 base pairs

(B) TYPE: nucleic acid

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(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 259:

5 TCTGNTCGCC GTCGCCCCGC CCCTGGCCTT TGCCCCGTCG GCGGGACTT CCTGTGTCGT 60

ATTTCCAAGG ACTCCAAAGC GAGGCCGGG ACTGAAGGTG TGGGTGTCA GCCCTCTGGC 120

10 AGAGGGTTAA CCTGGGTCAA ATGCACGGAT TCTCACCTCG TACAGTTACG CTCTCCCGCG 180

GCACGTCCGC GAGGMYTTGA AGTCCTGAGC GCTCAAGTTT GTCCGTAGTC GAGAGAAGGC 240

15 CATGGAGGTG CCGCCACCGG CACCGCGGAG CTCTCTCTGT AGAGCAITGT GCCTATTTCC 300

CCGAGTCTTT GCTGCCGAAG CTGTGACTGC CGATTTCGAA GTCCTTGAGG AGCGTCAGAA 360

GCGGCTTCCC TACGTCCAG AGCCCTATTA CCCGGAATCT GGATGGGACC GCCTCCGGGA 420

20 GCTGTTTGGC AAAGACACAG TGAACACTAG TCTGAATGTA TACCGAAATA AAGATGCCTT 480

AAGCCATTTT GTAATTGCAG GAGCTGTCAC GGAAGTCTT TTTAGGATAA ACGTAGGCCT 540

GCGTGGCTGG TGGCTGGTGG CATAATTGGA GCCTTGCTGG GCACTCCTGT AGGAGGCCTG 600

25 CTGATGGCAT TTCAGAACTA CTCTGGTGAG ACTGTTTCAGG AAAGAAAACA GAAGATCGA 660

AAGGCACTCC ATGAGCTAAA ACTGGAAGAG TGGAAAGCA GACTACAAGT TACTGAGCAC 720

30 CTCCCTGAGA AAATTGAAAG TAGTTTACAG GAAGATGAAC CTGAGAATGA TGCTAAGAAA 780

ATTGAAGCAC TGCTAAACCT TCCTAGAAAC CCTTCAGTAA TAGATAAACA AGACAAGGAC 840

TGAAAGTGCT CTGAACCTGA AACTCACTGG AGAGCTGAAG GGAGCTGCCA TGTCCGATGA 900

35 ATGCCAACAG ACAGGCCACT CTTTGGTCAG CCTGCTGACA AATTTAAGTG CTGGTACCTG 960

TGGTGGCAGT GGCTTGCTCT TGTCTTTTTC TTTTCTTTT AACTAAGAAT GGGGCTGTG 1020

40 TACTCTCACT TTACTTATCC TTAAATTTAA ATACATACTT ATGTTTGTAT TAATCTATCA 1080

ATATATGCAT ACATGAATAT ATCCACCCAC CTAGATTTTA AGCAGTAAAT AAAACAATTC 1140

GCAAAAGATT AAAGTTGAAT TTTACAGTTA AAAAAAAAAA AAAAAAAAAA AAA 1193

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(2) INFORMATION FOR SEQ ID NO: 260:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1262 base pairs

(B) TYPE: nucleic acid

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(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 260:

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GAAAAACCCA AAGATGCAGA CAATCTCTTT GAACATGAAT TGGGGCTCT CAATATGGCT 60

	GCATTACTAC GAAAAGAAGA AAGAGCAAGT CTCTTAGTA ATCTTGCCCC ATGTTGTAAG	120
	GCGTTGTGCT TCAGACGGGA TTCTGCAATT CGAAAGCAGC TTGTTAAAA TGAGAAGGGC	180
5	ACCATAAAAC AAGCTTACAC GAGTSCCTCCA ATGGTAGACA ATGAATTACT TCGATTGAGT	240
	CTTCGGTTAT TTAAGCGGAA GACTACTTGC CATGCTCCAG GACATGAAAA GACTGAAGAT	300
10	AATAAACTTT CACAGTCCAG TATCCAACAG GAACTGTGTG TGTCTTAAGA CCGAAGTTCA	360
	ATATGGTATT TTTGGTACTG TCTTCCTTCA GCAGTGCATA TTCTTTTGCA AAGTTCCTTG	420
	GTTTGACAAG CATTAGTGAC AAAGGCAGAA AAGATTATC AGCCATGCTA AAAGAGTGAA	480
15	GAATTTTGAT CTTTAGAGAC ACTAGTTTGT GCCAACTTAA GATTTTACGT TAATTTTAC	540
	ATAGTATTTG ACACTCATGC AAAATAATGT GAAAACATCT AGATTTAGTA GTTTATTTCTG	600
20	CGCCTTTTGT TAAAACTGAA GATTTTGGAA AATGGTTGTC ACTGCTCTTC CAGCCTATGA	660
	ATATTTTGT GAAATGGAAC CATGGATTTA TGTCTGGATC ATCCATACAG AACCAACAAT	720
	TTTATTCAAA AACAAATGTT TCATCAAAGT AATTGCTCAC ATTGTGCAGT ACTATGTTGT	780
25	ACAGACCACG TGAAAGGGAA TGCTGGTCTA GCTGGCGTGG TATGTTTATA GCGGAATTTT	840
	AGCAGAAGGA AGCCAAAATA GTTTTTCCTT TTTGAAAGTT TTTTAAAAAT TATTTTCATGG	900
30	GTCTTTTMTT TAATTAATAT GTGTGCATTG TTACAATGTA TGTGGGATGT CTTTGTACCC	960
	TAAATGCTTT TTTTGTATC AGAGATTGTG TACTATTTTT ATTTTAAATA AATGTATCTT	1020
	CCCTTTTCCT GTTTTAGATT TACTTTGCTC TTCGTTAATC TTATTCCTGA TGATCTAGAA	1080
35	CATTAGTCAT CAACATTACA TGTTCATGTC TTCAGATATT TTAGTGCTTG TGTCCTTATT	1140
	GTTGGACAGC TTAAACAGA GTTGATGGTA CTTCAAATAT AGCTCATTGA TACTTAAGGG	1200
40	CANCTTCCTT GGGATGTGGG CTTTTTGGAA GGAAAAAAT TNCCTCAAAG GCAAAATCCCA	1260
	GT	1262

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(2) INFORMATION FOR SEQ ID NO: 261:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1179 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

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55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 261:

	GGCAAACTTT CCCCCAANGC TTCGAAACTT GCAAGCCGAA ACCTTGAATC GTTAAAAGTT	60
	GGGTTGCGNC GCGCCCTGG CCCGAAGAAG CGCAATTGGC GTTCCGCGAA CGTTGGCCCT	120
60	CAACGGCTCG GCAGCCAGCC ATGTCCTGCA CCCAGGACAG CGGCCCTGGG CTACAAGGAC	180

	CTGGACCTCA TCTTCCTGCG CCGACCTGCG CGGGGAAGGG GAGTTTCAGA CTGTGAAGGA	240
	CGTCGTGCTG GACTGCCTGT TGGACTTCTT ACCCGAGGGG GTGAACAAAG AGAAGATCAC	300
5	ACCACTCACG CTCAAGGAAG CTTATGTGCA GAAAATGGTT AAAGTGTGCA ATGACTCTGA	360
	CCGATGGAGT CTTATATCCC TGTCAAACAA CAGTGGCAAA AATGTGGAAC TGAAATTTGT	420
10	GGATTCCCTC CGGAGGCAGT TTGAATTCAG TGTAGATTCT TTTCAAATCA AATTAGACTC	480
	TCTTCTGCTC TTTTATGAAT GTTCAGAGAA CCCAATGACT GAGACATTTT ACCCCACAAT	540
	AATCGGGGAG AGCGTCTATG GCGATTTCCA GGAAGCCTTT GATCACCTTT GTAACAAGAT	600
15	CATTGCCACC AGGAACCCAG AGGAAATCCG AGGGGGAGGC CTGCTTAAGT ACTGCAACCT	660
	CTTGGTGAGG GGCCTTAGGC CCGCCTCTGA TGAAATCAAG ACCCTTCAAA GGTATATGTG	720
20	TTCCAGGTTT TTCATCGACT TCTCAGACAT TGGAGAGCAG CAGAGAAAAC TGGAGTCCTA	780
	TTTGCAGAAC CACTTTGTGG GATIGGAAGA CCGCAAGTAT GAGTATCTCA TGACCCCTCA	840
	TGGAGTGGTA AATGAGAGCA CAGTGTGCCT GATGGGACAT GAAAGAAGAC AGACTTTAAA	900
25	CCTTATCACC ATGCTGGCTA TCCGGGTGTT AGCTGACCAA AATGTCATTC CTAATGTGGC	960
	TAATGTCACT TGCTATTACC AGCCAGCCCC CTATGTAGCA GATGCCAACT TTAGCAATTA	1020
30	CTACATTGCA CAGGTTTACG CAGTATTCAC GTGCCAGCAA CAGACCTACT CCACCTGGCT	1080
	ACCCTGCAAT TAAGAATCAT TTAATAATGT CCTGTGGGGA AGCCATTTCA GACAAGACAG	1140
35	GAGAGAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAGAGC	1179

40 (2) INFORMATION FOR SEQ ID NO: 262:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1162 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

45 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 262:

50	GGCAAACCTT CCCCCAANGC TTCGAAACTT GCAAGCCGAA ACCTTGAATC GTTAAAAGTT	60
	GGGTGCGNC GGCGCCCTGG CCCGAAGAAG CGCAATTGGC GTTCCGCGAA CGTTGGCCCT	120
	CAACGGCTCG GCAGCCAGCC ATGTCTTGCA CCCAGGACAG CGGCCCTGGG CTACAAGGAC	180
55	CTGGACCTCA TCTTCCTGCG CCGACCTGCG CGGGGAAGGG GAGTTTCAGA CTGTGAAGGA	240
	CGTCGTGCTG GACTGCCTGT TGGACTTCTT ACCCGAGGGG GTGAACAAAG AGAAGATCAC	300
60	ACCACTCACG CTCAAGGAAG CTTATGTGCA GAAAATGGTT AAAGTGTGCA ATGACTCTGA	360

CCGATGGAGT CTTATATCCC TGTCAAACAA CAGTGGCAAA AATGTGGAAC TGAAATTTGT 420
 GGATTCCTTC CGGAGGCAGT TTGAATTCAG TGTAGATTCT TTTCAAATCA AATTAGACTC 480
 5 TCTTCTGCTC TTTTATGAAT GTTCAGAGAA CCCAATGACT GAGACATTTC ACCCCACAAT 540
 AATCGGGGAG AGCGTCTATG GCGATTTCCA GGAAGCCTTT GATCACCTTT GTAACAAGAT 600
 10 CATTGCCACC AGGAACCCAG AGGAAATCCG AGGGGGAGGC CTGCTTAAGT ACTGCAACCT 660
 CTTGGTGAGG GGCTTTAGGC CCGCTCTGA TGAAATCAAG ACCCTTCAAA GGTATATGTG 720
 TTCCAGGTTT TTCATCGACT TCTCAGACAT TGGAGAGCAG CAGAGAAAAC TGGAGTCCTA 780
 15 TTTGCAGAAC CACTTTGTGG GATTGGAAGA CCGCAAGTAT GAGTATCTCA TGACCCTTCA 840
 TGGAGTGGTA AATGAGAGCA CAGTGTGCCT GATGGGACAT GAAAGAAGAC AGACTTTAAA 900
 CCTTATCACC ATGCTGGCTA TCCGGGTGTT AGCTGACCAA AATGTCATTG CTAATGTGGC 960
 20 TAATGTCACT TGCTATTACC AGCCAGCCCC CTATGTAGCA GATGCCAACT TTAGCAATTA 1020
 CTACATTGCA CAGGTTGAGC CAGTATTACG GTGCCAGCAA CAGACCTACT CCACTTGGCT 1080
 25 ACCCTGCAAT TAAGAATCAT TTA AAAATGT CCTGTGGGA AGCCATTTC GACAAGACAG 1140
 GAGAGAAAAA NAANGAAAAG AG 1162

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(2) INFORMATION FOR SEQ ID NO: 263:

(i) SEQUENCE CHARACTERISTICS:
 35 (A) LENGTH: 735 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

40 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 263:

CGGGCTGGGT ATTTGCCTCG CACCATGGCG CCCAAGGGCA AAGTGGGCAC GAGAGGGAAG 60
 AAGCAGATAT TTGAAGAGAA CAGAGAGACT CTGAAGTTCT ACCTGCGGAT CATACTGGGG 120
 45 GCCAATGCCA TTACTGCTT TGTGACGTTG GTCTTCTTTT ACTCATCTGC CTCATTTTGG 180
 GCCTGGTTGG CCTTGGGCTT TAGTCTGGCA GTGTATGGGG CCAGCTACCA CTCTATGAGC 240
 50 TCGATGGCAC GAGCAGCGTT CTTCTGAGGA TGGGCCCTG ATGGATGGTG GCACGAGCTC 300
 AACATGGAGC AGGGCATGGC AGAGCACCTT AAGGATGTGA TCCTACTGAC AGCCATCGTG 360
 CAGGTGCTCA GCTGCTTCTC TCTCTATGTC TGGTCTTCT GGCTTCTGGC TCCAGGCCGG 420
 55 GCCCTTACC TCCTGTGGGT GAATGTGCTG GGCCCTGGT TCACTGCAGA CAGTGGCACC 480
 CCAGCACCAG AGCACAATGA GAAACGGCAG CGCCGACAGG AGCGGCGGCA GATGAAGCGG 540
 60 TTATAGCCAT TGACATTGTG GCCACAGGCC ACTGGCCCTG GGTGGCTCTG TCAGGGTGCA 600

5 CAGCCCCTCA TGCCTGGAGC AATGAGGGTC TAGTCCAGGG GCCAAAAGCA GTCTGAGGTA 660
TTGGGTATAC TTATACTCTA TAGGGTCGTT GAATAAATGG CTTAGAATGT GAAAAAAAAA 720
AAAAAAAAA ATTTT 735

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(2) INFORMATION FOR SEQ ID NO: 264:

15 (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 783 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 264:

AAGTGCATGA GCTGCCGATG TGGTGCTTAG TGATTGCCGT TTCGGTCGCT CTCCCGTGTT 60
TCCCGGGCTG GGTATTTGCC TCGACCATG GCGCCCAAGG GCAAAGTGGG CACGAGAGGG 120
25 AAGAAGCAGA TATTTGAAGA GAACAGAGAG ACTCTGAAGT TCTACCTGCG GATCATACTG 180
GGGCCCAATG CCAATTTACTG CCTGTGTAGC TTGGTCTTCT TTTACTCATC TGCCTCATTT 240
TGGGCCTGGT TGGCCTGGGC TTTAGTCTGG CAGTGTATGG GGCCAGCTAC CACTCTATGA 300
30 GCTCGATGGC ACGAGCAGCG TTCTCTGAGG ATGGGGCCCT GATGGATGGT GGCATGGACC 360
TCAACATGGA GCAGGGCATG GCAGAGTGAG TGTCCCCAC CGCCAGCCCA GGCACCTTAA 420
35 GGATGTGATC CTACTGACAG CCATCGTGCA GGTGCTCAGC TGCTTCTCTC TCTATGTCTG 480
GTCCTTCTGG CTCTCTGGCTC CAGGCCGGGC CCTTTACCTC CTGTGGGTGA ATGTGCTGGG 540
CCCCTGGTTC ACTGCAGACA GTGGCACCCC AGCACCAGAG CACAATGAGA AACGGCAGCG 600
40 CCGACAGGAG CGGCGGCAGA TGAAGCGGTT ATAGCCATG ACGATTTKGC SACNRGCCAC 660
TGGCCCTGGG TGGCTCTGTC AGGGTGACA GCCCCTCATG CCTGGAGCAA TGAGGGTCTA 720
45 GTCCAGGGGC CAAAAGCAGT CTGAGGTATT GGGTATACTT ATACTCTATA GGGTCGTTGA 780
ATA 783

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(2) INFORMATION FOR SEQ ID NO: 265:

55 (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 1638 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

60 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 265:

	GGCACGAGGC GCGGGCAGCG GTGGCGGCGG CGCCCCCGG CGGGAGCCGT NCCCTTTCCC	60
5	GTGCGGGAGC GCGGGGYCGG GGYCCAGGG ANCCCGGMC ACGGAGAGCG GGAAGAGGAT	120
	GGATTGCCCG GCCCTCCCC CCGGATGGAA GAAGGAGGAA GTGATCCGAA AATCTGGGCT	180
	AAGTGCTGGC AAGAGCGATG TCTACTACTT CAGTCCAAGT GGTAAGAAGT TCAGAAGCAA	240
10	GCCTCAGTGT GCAAGGTACC TGGGAAATAC TGTGTATCTC AGCAGTTTGT ACTTCAGAAC	300
	TGGAAAGATG ATGCCTAGTA AATTACAGAA GAACAAACAG AGACTGCGAA ACGATCCTCT	360
15	CAATCAAAAT AAGGGTAAAC CAGACTTGAA TACAACATTG CCAATTAGAC AAACAGCATC	420
	AATTTTCAAA CAACCGGTAA CCAAAGTCAC AAATCATCCT AGTAATAAAG TGAAATCAGA	480
	CCCACAACGA ATGAATGAAC AGCCACGTCA GCTTTTCTGG GAGAAGAGGC TACAAGGACT	540
20	TAGTGCATCA GATGTAACAG AACAAATTAT AAAAACCATG GAACTACCCA AAGGTCTTCA	600
	AGGAGTGGT CCAGGTAGCA ATGATGAGAC CCTTTTATCT GCTGTTGCCA GTGCTTTGCA	660
25	CACAAGCTCT GCGCCAATCA CAGGGCAAGT CTCCGCTGCT GTGGAAAAGA ACCCTGCTGT	720
	TTGGCTTAAC ACATCTCAAC CCTCTGCAA AGCTTTTATT GTCACAGATG AAGACATCAG	780
	GAAACAGGAA GAGCGAGTAC AGCAAGTACG CAAGAAATTG GAAGAAGCAC TGATGGCAGA	840
30	CATCTTGTCG CGAGCTGCTG ATACAGAAGA GATGGATATT GAAATGGACA GTGGAGATGA	900
	AGCCTAAGAA TATGATCAGG TAACTTTTGA CCGACTTTCC CCAAGAGAAA ATTCTTAGAA	960
35	ATTGAACAAA AATGTTTCCA CTGGCTTTTG CCTGTAAGAA AAAAAATGTA CCCGAGCACA	1020
	TAGAGCTTTT TAATAGCACT AACCAATGCC TTTTGTAGATG TATTTTGTAT GTATATATCT	1080
	ATTATTCAAA AAATCATGTT TATTTTGAGT CCTAGGACTT AAAATTAGTC TTTTGTAAATA	1140
40	TCAAGCAGGA CCCTAAGATG AAGCTGAGCT TTTGATGCCA GGTGCAATCT ACTGGAAATG	1200
	TAGCACTTAC GTAAAACATT TGTTTCCCC ACAGTTTAA TAAGAACAGA TCAGGAATTC	1260
45	TAAATAAATT TCCAGTTAA AGATTATGT GACTTCACTG TATATAAACA TATTTTATA	1320
	CTTTATTGAA AGGGGACACC TGTACATTCT TCCATCRTCA CTGTAAAGAC AAATAAATGA	1380
	TTATATTAC AGACTGATTG GAATTCCTTC TGTGAAAAG CACACACAAT AAAGAACCCC	1440
50	TCGTTAGCCT TCCTCTGATT TACATTCAAC TCTGATCCG GGGCCTTAGG TTTGACATGG	1500
	GAGGTGGGAG GAAGATAGCG CATATATTTG CAGTATGAAC TATTGCCTCT GGGACGTTGT	1560
55	GAGGAATTGT GCTTTCACCA GAATTTCTAA GGATTTCTGG CTTAAATATC ACCTAGCCTG	1620
	TGGTAATTTT TTTTCCCT	1638

(2) INFORMATION FOR SEQ ID NO: 266:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1455 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 266:

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CGTGCCTACT GCCATGCAGG TACCGGGTCC GGAATTCCTCA GGGTCGACCC ACGCGTCCGC 60
 TCAGTTGGCA AGGTACCTGG GAAATACTGT TGATCTCAGC AGTTTGTACT TCAGAACTGG 120
 AAAGATGATG CCTAGTAAAT TACAGAAGAA CAAACAGAGA CTGCGAAACG ATCCTCTCAA 180
 TCAAAATAAG GGTAAACCAG ACTTGAATAC AACATTGCCA ATTAGACAAA CAGCATCAAT 240
 TTTCAAACAA CCGGTAACCA AAGTCACAAA TCATCCTAGT AATAAAGTGA AATCAGACCC 300
 ACAACGAATG AATGAACAGC CACGTCAGCT TTTCTGGGAG AAGAGGCTAC AAGGACTTAG 360
 TGCATCAGAT GTAACAGAAC AAATTATAAA AACCATTGGAA CTACCCAAAG GTCCTCAAGG 420
 AGTTGGTCCA GGTAGCAATG ATGAGACCCT TTTATCTGCT GTTGCCAGTG CTTTGCACAC 480
 AAGCTCTGCG CCAATCACAG GGCAAGTCTC CGCTGCTGTG GAAAAGAACC CTGCTGTTTG 540
 GCTTAACACA TCTCAACCCC TCTGCAAAGC TTTTATTGTC ACAGATGAAG ACATCAGGAA 600
 ACAGGAAGAG CGAGTACAGC AAGTACGCAA GAAATTGGAA GAAGCACTGA TGGCAGACAT 660
 CTTGTCGCGA GCTGCTGATA CAGAAGAGAT GGATATTGAA ATGGACAGTG GAGATGAAGC 720
 CTAAGAATAT GATCAGGTAA CTTTCGACCG ACTTTCCTCA AGAGAAAATT CCTAGAAATT 780
 GAACAAAAT GTTTCCTACTG GCTTTTGCCT GTAAGAAAAA AAATGTACCC GAGCACATAG 840
 AGCTTTTTAA TAGCACTAAC CAATGCCTTT TTAGATGTAT TTTTGTATTA TATATCTATT 900
 ATTCAAAAAA TCATGTTTAT TTTGAGTCCT AGGACTTAAA ATTAGTCTTT TGTAAATATCA 960
 AGCAGGACCC TAAGATGAAG CTGAGCTTTT GATGCCAGGT GCAATCTACT GGAAATGTAG 1020
 CACTTACGTA AAACATTTGT TTCCCCCACA GTTTTAATAA GAACAGATCA GGAATTCTAA 1080
 ATAAATTTCC CAGTTAAAGA TTATTGTGAC TTCCTGTAT ATAAACATAT TTTTATACTT 1140
 TATTGAAAGG GGACACCTGT ACATTCTTCC ATCCTCACTG TAAAGACAAA TAAATGATTA 1200
 TATTACAGA CTGATTGGA TTCTTTCTGT TGAAAAGCAC ACACAATAAA GAACCCCTCG 1260
 TTAGCCTTCC TCTGATTAC ATTCAACTCT GATCCCGGGG CCTTAGGTTT GACATGGGAG 1320
 GTGGGAGGAA GATAGCGCAT ATATTGTCAG TATGAACTAT TGCCTCTGGG ACGTTGTGAG 1380
 GAATTGTGCT TTCACCAGAA TTTCTAAGGA TTTCTGGCTT AAATATCACC TAGCCTGTGG 1440
 TAATTTTTTT TCCCT 1455

(2) INFORMATION FOR SEQ ID NO: 267:

- 5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1086 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

10

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 267:

15 CGCCTGCAGT ACCGGTCCGG AATTCCTGGG TCGACCCACG CGTCGCTGAC CCAGGAGAAG 60
CTGCCTGTCT ACATCAGCCT GGGCTGCAGC GCGCTGCCGC CGCGGGGCCG GCAGCTGAAC 120
TATGTGCTCT TCAGGGCGGG CACCGTGTTC CATTCATCTT TGTACCCCCA GCATCTAGCA 180
20 GTGTGGCAT GTAGTAGGCA CTCAAGAAAT GTGTGTGAA TGAACGATGC CTGTGACAAG 240
CAAGCGGACT TTATTCTTTC CTGACCCTTG CTCCTATGAC ACACCTCCTC CTGACTGCCA 300
CTGTCACTCC TTCAGAGCAG AACTCCTCTA GGAACCTGG ATGGGAAACA GCCATGGCCA 360
25 AGGACATCCT GGTGAAGCA GGGCTACACT TTGATGAACT GAACAAGCTG AGGGTGTGTTG 420
ACCCAGAGGT TACCCAGCAG ACCATAGAGC TGAAGGAAGA GTGCAAAGAC TTTGTGGACA 480
30 AAATGGCCA GTTTCAGAAA ATAGTTGGTG GTTTAATTGA GCTTGTGTGAT CAACTTGCAA 540
AAGAAGCAGA AATGAAAAG ATGAAGGCCA TCGGTGCTCG GAACTTGCTC AAATCTATAG 600
CAAAGCAGAG AGAAGCTCAA CAGCAGCAAC TTCAAGCCCT AATAGCAGAA AAGAAAATGC 660
35 AGCTAGAAAG GTATCGGGTT GAATATGAAG CTTTGTGTAA AGTAGAAGCA GAACAAAATG 720
AATTTATTGA CCAATTTATT TTTTCAGAAAT GAACTGAAAA TTTTCGCTTTT ATAGTAGGAA 780
40 GGCAAAACAA AAAAAAGCCT CTCAAAACCA AAAAAACCTC TGTAGCATTC CAGCGGCTTG 840
ACCAATGACC TATGTCACAA GAGGTGGCGT GTAAGGAATG CAGCCCCCTG AAGACAGCAC 900
TACAAGTCTG GGGGAGCCAG TTTTAACATC AGTGCACAGC TGCTGCTGGT GGCCCTGCAG 960
45 TGTACGTTCT CACCTCTTAT GCTTAGTTGG AACTAAGCAG TTTGTAAACT TTCATCCTTT 1020
TTTTTGTAAG TTCAAAAGC TTTGGAAGGA GARGCAATAA ATTTTGTGKT TCNAAATGGC 1080
50 TTGATG 1086

55 (2) INFORMATION FOR SEQ ID NO: 268:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1003 base pairs

(B) TYPE: nucleic acid

60

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 268:

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5  GGCACGGGAG CAGCCGGGCT GGTCTGCTG CGACCCGGCG GCCCGGAGTG GGGCGGCGGA      60
   GCAAACATGA ACGTTGGAGT TGCCACAGT GAAGTGAATC CAAATACCCG TGTCATGAAC      120
10 AGCCGGGGTA TGTGGCTGAC ATATGCATTG GGAGTTGGCT TGCTTCATAT TGTCTTACTC      180
   AGCATTCCTT TCTTCAGTGT TCCTGTTGCT TGGACTTTAA CAAATATTAT ACATAATCTG      240
   GGGATGTACG TATTTTGTCA TGCAGTGAAA GGAACACCTT TCGAAACTCC TGACCAGGGT      300
15 AAAAGCAAGG CTCCTAACTC ATTGGGAACA ACTGGACTAT GGAGTACAGT TTACATCTTC      360
   ACGGAAGTTT TTCACAATTT CTCCAATAAT TCTATATTTT CTGGCAAGTT TCTATACGAA      420
   GTATGATCCA ACTCACTTCA TCCTAAACAC AGCTTCTCTC CTGAGTGTAC TAATTCCCAA      480
20 AATGCCACAA CTACATGGTG TTCGGATCTT TGGAAATTAAT AAGTATTGAA ATGTTTTGAA      540
   ACTGAAAAAA AATTTTACAG CTA CTACTGAATT TCTTATAAGG AAGGAGTGGT TAGTAAACTG      600
25 CACTGTTTCT CTGATAATGT GAAATGAGAA GTATTTACAT TGGAGGGCCA ATGGCTGGTC      660
   CTTCAGTGC TGTTTTGAAG TGCAGATTTC CATTAATGA TGCCTCTGTT TAATACACCT      720
   GGTACATTTT TGAAGAGGGG CTTTATAAGC AGGCTGGGCA GGCCAGCTT ATAAGTTAAA      780
30 GGGCATCACA GTGAGGGTGT AGTAGATAAA TTCAAGGAAA TAAGAGATTT GTAAGAACT      840
   AGGACCAGCT TAACTTATAA TGAATGGGCA TTGTGTTAAG AAAAGAACAT TTCCAGTCAT      900
35 TCAGCTGTGG TTATTTAAAG CAGACTTACA GTTAAACCGG AATCCTCTCT ATACAAGTTT      960
   ATTAAAGATT ATTTTATTAT CCGTAAAAAA AAAAAAAAAA AAA      1003

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(2) INFORMATION FOR SEQ ID NO: 269:

(i) SEQUENCE CHARACTERISTICS:

- 45 (A) LENGTH: 1234 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 269:

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   ATCAGCATCT ACAAGTAGCA TATTTTGGAT GGTGTTTGTTG TGCTACTTCA AAGTAACTAG      60
   GAAAAAATAA TCCTCGCAAC ACAGGTACCT TGTCATGTCA GAATTGGGGG TGTTAGGTTG      120
55 CCAGTTGTAT CAGTGTGAT TCATTTTCAAT ACTTCCTACA GAGCAAACAT GAACGTTGGA      180
   GTTGCCACAA GTGAAGTGAA TCCAAATACC CGTGTTCATGA ACAGCCGGGG TATGTGGCTG      240
60 ACATATGCAT TGGGAGTTGG CTTCCTTCAT ATTGTCTTAC TCAGCATTC CTTCTTCAGT      300

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GTTCCTGTTG CTTGGACTTT AACAAATATT ATACATAATC TGGGGATGTA CGTATTTTGTG 360
 CATGCAGTGA AAGGAACACC TTTCGAAACT CCTGACCAGG GTAAAGCAAG GCTCCTAACT 420
 5 CATTGGGAAC AACTGGACTA TGGAGTACAG TTTACATCTT CACGGAAGTT TTTCACAATT 480
 TCTCCAATAA TTCTATATTT TCTGGCAAGT TTCTATACGA AGTATGATCC AACTCACTTC 540
 10 ATCCTAAACA CAGCTTCTCT CCTGAGTGTG CTAATTCCCA AAATGCCACA ACTACATGGT 600
 GTTCGGATCT TTGGAATTAA TAAGTATTGA AATGTTTTGA AACTGAAAAA AAATTTTACA 660
 GCTACTGAAT TTCTTATAAG GAAGGAGTGG TTAGTAAACT GCACTGTTTC TSTGATAATG 720
 15 TGAAATGAGA AGTATTTACA TTGGAGGGCC AATGGCTGGT CCTTCAAGTG CTGTTTTGAA 780
 GTGCAGATTT CCATTAAATG ATGCCTCTGT TTAATACACC TGGTACATTT CTGAAGAGGG 840
 20 GCTTTATAAG CARGCTGGGC AGGCCAGCT TATAAGTTAA AGGGCATCAC AGTGAGGGTG 900
 TAGTAGATAA ATTCAAGGAA ATAAGAGATT TGTAAGAAAC TAGGACCAGC TTAACCTATA 960
 ATGAATGGGC ATTGTGTTAA GAAAAGAACA TTTCAGTCA TTCAGCTGTG GTTATTTAAA 1020
 25 GCAGACTTAC ATGTAAACCG GAATCCTCTC TATACAAGTT TATTAAAGAT TATTTTATT 1080
 ACCRTACATA TTTCKCTGT TTTATGTAAG YGGATGTATA TCCTCTGTG TTATACAAGC 1140
 30 CAGTTCCAC TTATGAGGT ACTTTTTTGG TTTGCTGGG CTTAATATTG TGTATTGGTC 1200
 AATGAGGCCA TTTTACANT TATTAACGTT ACAG 1234

35

(2) INFORMATION FOR SEQ ID NO: 270:

40 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 574 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 270:

NGAGGTGCGT TCTGAGCCGT CTGTCTGCG CCAAGATGCT TCAAAGTATT ATTA AAAACA 60
 TATGGATCCC CATGAAGCCC TACTACACCA AAGTTTACCA GGAGATTTGG ATAGGAATGG 120
 50 GGCTGATGGG CTTTCATCGTT TATAAAATCC GGGCTGCTGA TAAAGAAAGT AAGGCTTTGA 180
 AAGCTTCAGC GCCTGCTCCT GGTCATCACT AACCAGATTT ACTTGGAGTA CATGTGAAAG 240
 55 AAAACGTCAG TCTGCCTGTA AATTTTCAGCA AGCCGTGTTA GATGGGGAGC GTGGAACGTC 300
 ACTGTACACT TGTATAAGTA CCGTTTACTT CATGGCATGA ATAAATGGAT CTGTGAGATG 360
 CACTGCTACC TGGTACTGCT TTCAGTGTGT TCCCCCTCAG CCCTCCGGCG TGT CAGGCAT 420
 60

ACTCTGAGTA GATAATTTGT CATGCAGCGC ATGCAATCAG AATCTCACTG AGCCACCCAT 480
 CATTGTGAAA TAATTACCTC AGTTGTACAG GACTTGGTGA TCAGGATCCA GGCACCTCACT 540
 5 TGTATTCTAC TGCTCAATAA ACGTTTATTA AACT 574

10 (2) INFORMATION FOR SEQ ID NO: 271:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1731 base pairs
 (B) TYPE: nucleic acid
 15 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 271:

20 GCTGCAAGGT GCGCCTCGTG CCGCTGCAGA TCCAGCTCAC TACCCCTGGGA AATCTTACAC 60
 CTTCAAGCAC TGTGTTTTTC TGCTGTGATA TGCAGGAAAG GTTCAGACCA GCCATCAAGT 120
 ATTTTGGGGA TATTATTAGC GTGGGACAGA GATTGTIGCA AGGGGCCCGG ATTTTAGGAA 180
 25 TTCTGTATAT TGTAACAGAA CAATACCCTA AAGGCTCTGG GAGCACGGTT CAAGAAATTG 240
 ATTTAACAGG TGTAAAACTG GTACTTCCAA AGACCAAGTT TTCAATGGTA TTACCAGAAG 300
 30 TAGAAGCGGC ATTAGCAGAG ATTCCCGGAG TCAGGAGTGT TGTATTATTT GGAGTAGAAA 360
 CTCATGTGTG CATCCAACAA ACTGCCCTGG AGCTAGTTGG CCGAGGAGTC GAGGTTTACA 420
 35 TTGTTGCTGA TGCCACCTCA TCAAGAAGCA TGATGGACAG GATGTTTGCC CTCGAGCGTC 480
 TCGCTCRARC CNGGGATCAT AGTGACCACG AGTGNAGGCT GTTCTGCTTC AGCTGGTAGC 540
 TGATAAGGAC CATCCAAAT TCAAGGAAAT TCAGAATCTA ATTAAGGCGA GTGCTCCAGA 600
 40 GTCGGGTCTG CTTTCCAAAG TATAGGACAT TTGAAGAACT GGTATGCTAC TCACTGGTGA 660
 AGGACAGTCA GGTGAAGGAC TGTAAGCCCA CACAAGCTCT TCTTATCTCT ACTAGAATTA 720
 AAATGTTAAG TCAAAAACGG CTCTTTTTC GCGCCTCCTA GTGAACCTAA CCAGCTAGAC 780
 45 CATTTGAGTA CCAGCATTTA GTTACAAACG TCAAAGGCTT CCGGTGCTGC TTACCTTCCT 840
 TTTTTGTAA TGTGCTTTA TTTATTAAAA AAAATTACAA TGAAGATGCC TGTPTTGTCT 900
 50 CTA CTGCTGTA CTCTGATCGT ATCTTTCCAA AGTGCAGACT CTTGTGAAGT TTTCTTAAAT 960
 TGTTCACTTT AAAGAAAATG ACGTACCAAC AATGATTGG CTTTTATATT ACTGTAAGAT 1020
 55 GTTATAATGT TAATGTGGAT GTAGTGCTTT TACTTTACAG ATTGATTGGA ATAAGATTAT 1080
 TGCATATGAA TTTACCCACA GGACTCTGAA TCATGTTACC CACTCCCTC ACAATGTTGT 1140
 CCACTTAGTG AGTTGCATTG ATCTATCCGT ACCAAATGAT GTTGAATAAT TACATATCTT 1200
 60 TCTKGA CTAT ACTGATTTCT TATTTTGGTC ACTATTACTA AATCTCTGTT AATATTCTCT 1260

CTTTAACTG AAAAGGGATG GGATAGAAGG GTTTCGAATG CCATATTATT GGTGGAGGGC 1320
 TGTMTTAAAC TCTTTGAAGT ATGGCTTGCT GAATATCTTT ACCAACATCT TGAATATATA 1380
 - 5 TTCTAGTGTC CACAAGATTT AGCAAAAAGA TAAAGCTTGG GTGGAATATC ATTTTAAAT 1440
 GTTCATGTTT TGTTCATAT TTTCTTCACC TACTCTCCAA ATATTGTAAT GCAAAAAGTC 1500
 10 TCAGTAATGA TTGGTAGTA TTAATTTTGT GGTCAATGTT TCTCTCGAT AAATTTATTT 1560
 TCATTAAATA CTTRTTAGAG GGTTTGAAG TGTMTTCAAA ATATGTGAAA TGTGAACTG 1620
 CTGCTTTTA TATTAAAGTA ATTAAAGAAA ATGTATGTG ATTGAAATTA TTTTGNCTC 1680
 15 CACAAGATGG CTCTATGAGT ATTCTCCAG GGATTCTAAT ATTTATTTAA G 1731

20

(2) INFORMATION FOR SEQ ID NO: 272:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1320 base pairs
 25 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 272:

30

CTGCTTAGGA AGAGAAGGTC AGAGTTCGCG GGGGCAGAGG CATTCTTGCC GCTGGCCCAG 60
 TCACTATGTA GTGGAGGGGC AGACACCCTC CCGCAAATTC TGGAAGGTTT TTAGTCTCGA 120
 35 CTAGGGCAGT AGCCCAGGAC TCCTAGTCGC CGGCTTCAGG TCACTGCCGG CTGAACGGAG 180
 CTGCCGTCGC CATGTTTGGC TGCTTGGTGG CGGGGAGGCT GGTGCAACA GCTGCACAGC 240
 AAGTGGCAGA GGATAAATTT GTTTTGGACT TACCTGATTA TGAAAGTATC AACCATGTTG 300
 40 TGGTTTTTAT GCTGGGAACA ATCCCATTTT CTGAGGGAAT GGGAGGATCT GTCTACTTTT 360
 CTTATCCTGA TTCAAATGGA ATGCCAGTAT GGMAACTCCT AGGATTTGTC ACGAATGGGA 420
 45 AGCCAAGTGC CATCTTCAAA ATTTAGGTC TTAAATCTGG AGAAGGAAGC CAACATCCTT 480
 TTGGAGCCAT GAATATGTC CGAACTCCAT CTGTTGCTCA GATTGGAATT TCAGTGAAT 540
 TATTAGACAG TATGGCTCAG CAGACTCCTG TAGGTAATGC TGCTGTATCC TCAGTTGACT 600
 50 CATTCACCTA GTTCACACAA AAGATGTTGG ACAATTTCTA CAATTTTGCT TCATCATTTG 660
 CTGCTCTCTA GGCCAGATG ACACCAAGCC CATCTGAAAT GTTCATTCCG GCAAATGTGG 720
 55 TTCTGCAAAT GGTATGAGGC ATTTCTGTC TCCAATATTA AGGCTTTTTA TAACTGAATA 780
 TCTATTTTGT CTATGAATAT ATTCTTTT TGACATTTAA ACATATCTT TTATTGTGAA 840
 CATCAGCACT GCATGCCATT AAAGTATGTA CTATAGAGAT CTGATGAGAA ACAGTTCTTA 900
 60

CCCTAAATAT TTTGTTATAT TGTCGCCATT ATGAATTTAT AAAGACAGGA AAATATAGTT 960
 GCCTATGTTT TAGGGACCAC TATTAAAGCT TATAAATATT TGTGTATTTT CATTTAGAAG 1020
 - 5 TACCATCTAT GAGAGTAGTT TATACTGCAC TGTGTACATG AATGGCTAAT GAATCTATTT 1080
 TCCAACCTTC CCGTGTTTTA TAGATATTTT TTTTCACTTT GAGTATCCTA GAGATGGGAG 1140
 10 GATGCCTAGG AAGAGTTTGT TGAGAAGTGG TACCATGGTG TAGCATGGGA GAGCAITGGG 1200
 AATGCACTAG GTTTGAATTT GGCATAATGG TAGCTATGTG ACCCTGAGCA AATTTCTCTC 1260
 ATCTGCTCAT CTGANGAATG AGGAAATAGG AGTGAATTTG ATNTTTCCTA GGTCCNICTA 1320

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(2) INFORMATION FOR SEQ ID NO: 273:

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(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 515 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 273:

CCCTGGAGAG GGGCTGCTGT GCCAGCTTGG GGAGGGTCTG GGATGGGGCT GCCCCTGATG 60
 30 GCCCTGATGT GGAGTACCTT GCCAGCATCT GCTGGGGTGA ACTTTATTTT AGCCCTTCCC 120
 TTGTTGYTCT TATGAAGAAC AGAGGAGGGG TGGGCAGGTC AGTGATGTCA GCAGTGAGTA 180
 35 TTCCCAGCAC AGCGGCTCTG GAAGAGGCAT GAGGCAITTC TTTTCAGGAA TGRTCATTAT 240
 TCAGCCAGAA GGCATTTCATT AAGTAAGTCC TGACTTTGTG CCCAGCTCTG TGTTATAGGC 300
 CCTTGGCGAG ACTCAGGAGG GGCARAGGAC GCTAGKTTKT AGWTAACACG GAACCTCARA 360
 40 GGTATATATG TCCAAGAAGA CCCGGGGGCG GTGAAAACCC TGTGGACTAA TGCTCACGGG 420
 AGCCCGAGGT CACACTTTGA CTTTGCTACC ATGGGCTGTG TCTANGNACG TATATATGCT 480
 GCGTAATTAT TACAGAGGCA GTCCATGTGC ATTGT 515

45

(2) INFORMATION FOR SEQ ID NO: 274:

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(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 2995 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 274:

TGACACCCAT AAGGAATTCA TGAAGAAAGT AGAAGAAAAG CGAGTGGACG TTAACCTCAGC 60

60

	AGTAGCCATG GGAGAAGTCA TCCTGGCTGT CTGCCACCCC GATTGCATCA CAACCATCAA	120
	ACACTGGATC ACCATCATCC GAGCTCGCTT CGAGGAGGTC CTGACATGGG CTAAGCAGCA	180
5	CCAGCAGCGT CTTGAAACGG CCTTGTCTAGA ACTGGTGGCT AATGCTGAGC TCCTGGAAGA	240
	ACTTCTGGCA TGGATCCAGT GGGCTGAGAC CACCCTCATT CAGCGGGATC AGGAGCCAAT	300
10	CCCCGAGAAC ATTGACCGAG TTAAAGCCCT TATCGCTGAG CATCAGACAT TTATGGAGGA	360
	GATGACTCGC AAACAGCCTG ACGTGGACCG GGTACCAAG ACATACAAA GGAAAAACAT	420
	AGAGCCTACT CACGCGCCTT TCATAGAGAA ATCCCGCAGC GGAGGCAGGA AATCCCTAAG	480
15	TCAGCCAACC CCTCCTCCCA TGCCAATCCT TTCACAGTCT GAAGCAAAAA ACCCACGGAT	540
	CAACCAGCTT TCTGCCCGCT GGCAGCAGGT GTGGCTGTTA GCACTGGAGC GGCAAAGGAA	600
20	ACTGAATGAT GCCTTGGATC GGCTGGAGGA GTTGAAAGAA TTTGCCAACT TTGACTTTGA	660
	TGTCCTGAGG AAAAAGTATA TGCCTTGGAT GAATCACAAA AAGTCTCGAG TGATGGATTT	720
	CTTCCGGCGC ATTGATAAGG ACCAGGATGG GAAGATAACA CGTCAGGAGT TTATCGATGG	780
25	CATTTTAGCA TCCAAGTTC CCACCACCA GTTAGAGATG ACTGCTGTGG CTGACATTTT	840
	CGACCGAGAT GGGGATGGTT ACATTGATTA TTATGAATTT GTGGCTGCTC TTCATCCCAA	900
30	CAAGGATGCG TATCGACCAA CAACCGATGC AGATAAAATC GAAGATGAGG TTACAAGACA	960
	AGTGGCTCAG TGCAAATGTG CAAAAGGTT TCAGGTGGAG CAGATCGGAG AGAATAAATA	1020
	CCGGTTCTTC CTCGCAATC AGTTTGGGA TTCTCAGCAG TTGCGGCTGG TCCGTATTCT	1080
35	GCGCAACCGT GATGGTTCGC GTTGGTGGAG GATGGATGCC CTTGGATGAA TTTTGTAGTA	1140
	AAAATGATCC CTGCCGAGCA CGAGGTAGAA CTAACATTGA ACTTAGAGAG AAATTCATCC	1200
40	TACCAGAGGG AGCATCCAG GGAATGACCC CCTTCGCTC ACGGGGTCGA AGGTCCAAAC	1260
	CATCTTCCCG GGCAGCTTCC CTTACTCGTT CCAGCTCCAG TGCTAGTCAG AGTAACCACA	1320
	GCTGTACATC CATGCCATCT TCTCCAGCCA CCCCAGCCAG TGAACCAAG GTTATCCCAT	1380
45	CATCAGGTAG CAAGTTGAAA CGACCAACAC CAACTTTTCA TTCTAGTCGG ACATCCCTTG	1440
	CTGGTGATAC CAGCAATTAG TTCTTCCCG GCCTCCACAG GTGCCAAAAC TAATCGGGCA	1500
50	GACCCTAAAA AGTCTGCCAG TCGCCCTGGG AGTCGGGCTG GGAGTCGAGC CGGGAGTCGA	1560
	GCCAGCAGCC GGCAGGAAG TGACGCTTCT GACTTTGACC TCTTAGAGAC GCATTGCTTG	1620
	TTCCGACACT TCAGAAAGCA GCGCTGCAGG GGGCCAAGGC AACTCCAGGA GAGGGCTAAA	1680
55	CAAACCTTCC AAAATCCCAA CCATGTCTAA GAAGACCACC ACTGCCTCCC CCAGGACTCC	1740
	AGGTCCCAAG CGATAAACT GTCTAAGCAC CCCCAAGCCA CTATCCACTT TGAATCCTGC	1800
60	TCCATACATT GGGTGTATAT TTATTTCTGAA CGGGAGAAGT TATATTGTTA AAAGTGTAAG	1860

	AGAATAATTG TGTATGAAG CTGCCTTATT TTTTCTCTT TTGTAAGTTA CTATTTTCAT	1920
	GTGAATATTT ATGTAGATAA AATTGCGCTC CTGGTAACCC TGTAATGGAT GGGGCCCAGA	1980
5	AATGAAATAT TTGAGAAAA CAAGTGAAAA GGTCAAGATA CAAATGTGTA TTAACAAAAA	2040
	AAAAGCCTAT TAATAGGGTT TCTGCGCGGT GCAGGGTTGT AAACCTGCTT TATCTTTTAG	2100
10	GATTATTCCT AAATGCATCT TCTTTATAAA CTGACTTGC TATCTCAGCA AGATAAATTA	2160
	TATTAAAAAA ATAAGAATCC TGCAGTGTTC AAGGAACTCT TTTTGTGTAA ATCACGGACA	2220
	CCTCAATTAG CAAGAACTGA GGGGAGGGCT TTTCCATTG TTTAATGTTC TGTGATTTTC	2280
15	AGCTAAAGAG AGGGAACCTC ATCTAAGTAA CATTTGCACA TGGATACAGC AAAAGGAGTT	2340
	CATTGCAATA CTGTCTTTGG ATATGTGTTT AGTACTGGGT GTTTAAAGGA CAAATAGCTG	2400
20	CTAGAATTCA GGGGTAAATG TAAGTGTTCA GAAACGTC GAACATTTGG GGTTTTAAAC	2460
	TGATTTGTTG CTCCCTATCC AGCCTAGACA CCAGTAACTC TTGTGTTTAC CAGGACCCAG	2520
	ACCCTTGGCA AGGGATAGGC TCGTTGGTGA CATTTGTGAAT TTCAGATTTG TTTTATCCAC	2580
25	TTTTTTTGCT ATTTATTTAA ATGGTCGATC AACTTCCCAC AACTGAGGA ATGAATTCCA	2640
	CGAGCCTGTT CTGAAATGT GGACGTAAGA CAAACACGTG CTCGTCCTTT AATGGAGTTC	2700
30	ACCAGCACAC TTGTTAACCA GTCTGTGTTG CTTCGTCTTT TTTTGTGCG TAATAAAGTC	2760
	AACTGACCAA GTGACCATGA AAAGGGGCTG TCTGGGGCTC CTGTTTTTTA GCTGCTGTTT	2820
	TTGAGCTCCG ACCATGTTGC TGTGTGATTA TCTCAATTGG TTTTAATTGA GGCAGAACT	2880
35	GAAGCTCTAC CAATGAAGTG TTTAGAAACA AGACACACTT TTGTATTAAA ATTGCTTGCA	2940
	GTAACAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAACTCG AGGGGGGCCG GGTAC	2995
40		

(2) INFORMATION FOR SEQ ID NO: 275:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1990 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 275:

	GGGACCGCG CGSCTCCCGG GGATGGTGAG CAAGCGCTG CTGCNCGTG TCTGCCGTCA	60
	ACCGCAGAGG ATGAAGCTGC TGCTGGGCAT CGCCTTGCTG GCCTACGTCG CCTCTGTTTG	120
55	GGGCAACTTC GTTAATATGA GGTCTATCCA GGAATATGGT GAACTAAAAA TTGAAAGCAA	180
	GATTGAAGAG ATGGTTGAAC CACTAAGAGA GAAATCAGA GATTTAGAAA AAAGCTTTAC	240
60	CCAGAAATAC CCACCACTAA AGTTTTTATC AGAAAAGGAT CGGAAAAGAA TTTTGAWTAA	300

	CAGGAGGCGC AGKGTTCGTG GGCTCCCATC TKAACGTACA AACTCATGAT GGACGGCCAC	360
	GAGGTGACCG TGGTGGACAA TTCTTTCACG GGCAGGAAGA GAAACGTGGA GCACTGGATC	420
5	GGACATGAGA ACTTCGAGTT GATTAACCAC GACGTGTGGG AGCCCCCTCTA CATCGAGGTT	480
	GACCAGATAT ACCATCTGGC ATCTCCAGCC TCCCCTCCAA ACTACATGTA TAATCCTATC	540
10	AAGACATTAA AGACCAATAC GATTGGGACA TTAAACATGT TGGGGCTGGC AAAACGAGTC	600
	GGTGCCCGTC TGCTCCTGGC CTCCACATCG GAGGTGTATG GAGATCCTGA AGTCCACCCCT	660
	CAAAGTGAGG ATTACTGGGG CCACGTGAAT CCAATAGGAC CTCGGGCCTG CTACGATGAA	720
15	GGCAAACGTG TTGCAGAGAC CATGTGCTAT GCCTACATGA AGCAGGAAGG CGTGGAAGTG	780
	CGAGTGGCCA GAATCTTCAA CACCTTTGGG CCACGCATGC ACATGAACGA TGGGCGAGTA	840
20	GTCAGCAACT TCATCCTGCA GGCCTCCAG GGGGAGCCAC TCACGGTATA CGGATCCGGG	900
	TCTCAGACAA GGGCGTTCCA GTACGTCAGC GATCTAGTGA ATGGCCTCGT GGCTCTCATG	960
	AACAGCAACG TCAGCAGCCC GGTCAACCTG GGAACCCAG AAGAACACAC AATCCTAGAA	1020
25	TTTGCTCAGT TAATTAAAAA CCTTGTGGT AGCGGAAGTG AAATTCAGTT TCTCTCCGAA	1080
	GCCCAGGATG ACCCACAGAA AAGAAAACCA GACATCAAAA AAGCAAAGCT GATGCTGGGG	1140
30	TGGGAGCCCG TGGTCCCGCT GGAGGAAGGT TTAAACAAAG CAATTCACTA CTTCCGTAAA	1200
	GAACTCGAGT ACCAGGCAAA TAATCAGTAC ATCCCCAAAC CAAAGCCTGC CAGAATAAAG	1260
	AAAGGACGGA CTCGCCACAG CTGAACTCCT CACTTTTAGG ACACAAGACT ACCATTGTAC	1320
35	ACTTGATGGG ATGTATTTT TGGCTTTT TGTGTGCTT TAAAGAAAGA CTTTAACAGG	1380
	TGTCATGAAG AACAACTGG AATTTTATTC TGAAGCTTGC TTTAATGAAA TGGATGTGCC	1440
40	TAAAAGCTCC CCTCAAAAAA CTGCAGATTT TGCCTTGCAC TTTTGAATC TCTCTTTTTA	1500
	TGTAAATAG CGTAGATGCA TCTCTGCGTA TTTTCAAGTT TTTTATCTT GCTGTGAGAG	1560
45	CATATGTTGT GACTGTGCTT GACAGTTTTA TTTACTGGTT TCTTTGTGAA GCTGAAAAGG	1620
	AACATTAAGC GGGACAAAAA ATGCCGATTT TATTTATAAA AGTGGGTACT TAATAAATGA	1680
	GTCGTATAC TATGCATAAA GAAAAAYCCT AGCAGTATIG TCAGGTGGTG GTGCGCCGGC	1740
50	ATTGATTTTA GGGCAGATAA AAGAATTCG TGTGAGAGCT TTATGTTTCT CTTTAAATTC	1800
	AGAGTTTTTC CAAGGTCTAC TTTTGAGTGT CAAACTTGAC TTTGAAATAT TCCTGTTGGT	1860
	CATGATCAAG GATATTTGAA ATCACTACTG TGTTTTGCTG CGTATCTGGG GCGGGGGCAG	1920
55	GTTGGGGGGC ACAAAGTTAA CATATTCCTG GTTAACCATG GTTAAATATG CTATTTTAAT	1980
	AAAATATTGA	1990
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(2) INFORMATION FOR SEQ ID NO: 276:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2436 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 276:

	AACTTCGCTT AGCTCTCCAG GGTNAAACGG GTGAGNCCTT AAAACAGAA GAGAACAAGA	60
15	TTTAAAGTCC GTTGCAATTGA AAATAACAAA CAATATCAAT GTTTTAATCA AGGATCTCTT	120
	CCACATTCCT CCTTCTTATA AGAGCACAGT AACACTATCC TGGAAACCTG TACAAAAGGT	180
20	TGAGATTGGG CAAAAGAGAG CCAAGTGAAGA TACAACCTCA GGTTCACCAC CCAAGAAATC	240
	TTCAGCAGGA CCAAAAAGAG ATGCCAGGCA GATTTATAAC CCTCCCAGTG GGAAATATAG	300
	CAGCAATTTG GGCAACTTTA ATTATGAGCA GAGAGGAGCC TTCAGGGGAA GTAGAGGTGG	360
25	CCGAGGTTGG GGCACACGAG GAAATCGTAG TCGGGGAAGA CTCTACTGAA TAAGACATCA	420
	GCATTCCTCA GCATTGTCAT GAGCTTAATA TACTTAAATT CTACTACTCA TTGGATTGCC	480
30	GGGGATGTCC CTTTAAACAG ACTGCTGCCT TCAGCTAAAA ACTTAATGTT CTTTATACCT	540
	TTGTATGTAT GACCTACTTT TGTAACAGAC CATGGTTGTG TCCAAGGTAA AACCACAGTG	600
	ATATTTTGG ATGCTTTGTC TGCAATCTTG ACTTGTTTTT GCAGTATCAT TATTCAGACT	660
35	TCAAATGTG AATCTTTTAA ACATCTTGAT AATTTGTTGT TGAGAGCTGT TCATTCTAAA	720
	ATGTAATGAA ATTCAGTCTA GTTCTGCTGA TAAAGATCAT CAGTTTGTAA AGGTTACTGA	780
40	TTTTCTCTT CCCTCTTAGT TTTTACCCA ATATATGGAG AAGAGTAATG GTCAATCTTA	840
	ACATTTTGTT TTAATGTTT AATAAAGCTG CTGGGCAGTG GTGCAGCATT CCTACCTAGT	900
	GTCATAAAAG CAAAATACTT ACATAGCTTT CTTAAAATAT AGGAATGACA TTACATTTTT	960
45	AGGAGAAAGT AAGTTGCTTT GCACCGCCTA CTTAATTCCT TTCCATATAT TGTGATACAA	1020
	ACTTTTGAAT ATGGAATCTT ACTATTTGAA TAGAAATGTG TATGTATAAT ATACATACAT	1080
50	ACATAAGCAT ATATGTGTGT GTGTGTGTGT ATATATATAT ATATGCATGC TGTGAACTT	1140
	GACTACACAA CATAAATCAC TTTTAAAT CCAGGAACGG GTAGTCTGAC ACGGTGATTA	1200
	TCCTTTTGAG GCTGAATCCG TTATTAACCT GTTATTTAGG TTTTACTCC CAGTAGCAAG	1260
55	GGATTCTAAG TTAGTTGCAC TTACATGATT ATTGTTATTT AAAACTAAGA ATAAAGGCTG	1320
	CATTTTCAAA GATAAATGG AATTGCTGTT GGTGAAATAA CAACCAAAT ACTGAATCTG	1380
60	ATGTACATAC AGGTTTCTAC AGGAAGAGAT GGTATAATTT ACAATTGGA GATTTAATAA	1440

CCAGGGCTAC CCAGAAAAAG TGACTTGATA ACATGGTACC AATAAGTAAG GGATGCTCTC 1500
 TCGGTTTGCT TTTGCCACTT TCAAGATTTT AACTTCTCAG GTTATTAATC AAAATTATTG 1560
 - 5 TATAAGTTAG CCAATAGAAT TTTTAGGTTA AAACAACAGA TGGGGGGTTT GTGGAGTGT 1620
 TAATGTCATG GGCATTTTTA GTAGCATAGA CCCTTTGTTC TGCATTTGAA TGTPTCGTAT 1680
 10 ATTTTGTGTT CACAGTTAAT CTTCCCTCCC CAAGTTTGCT ATTCAAATCA ACTGCCTGAA 1740
 TGACATTTCT AGTAGTCTGA TGTATTTTTT TGAGGAATAG TTTGTGATTC CAATGCAGGT 1800
 GTCTTCATTA CCATPACCTC TACTCTGCAG AAGAAGCAAA ACTCCTTTAT TAGAATTACT 1860
 15 GCACATGTGT ATGGGGAAAA TAGTTCTGAA AGGCTAGAAT GATACAAGTG AGCAAAAGTT 1920
 GGTCAGCTTG GCTATGGAGT GGTGGCAATA ATCTCTAAAC ATTCCAAAAG ACCATGAGCT 1980
 GAACCTAAAC TCCCTTGGAA TCTGAACAAA GGAATATAAA ATTGCCATTT GAAAACCTGAC 2040
 20 CAGCTAATCT GGACCTCAGA GATAGATCAG CCAGTGGCCC AAAGCCATTT CAAGTACAGA 2100
 AATTATAGAG ACTACAGCTA AATAAATTTG AACATTAAAT ATAATTTTAC CACTTTTTGT 2160
 25 CTTTATAAGC ATATTGTAA ACTCAGAACT GAGCAGAAGT GACTTTACTT TCTCAAGTTT 2220
 GATACTGAGT TGACTGTTCC CTTATCCCTC ACCCTTCCCC TTCCCTTTCC TAAGGCAATA 2280
 GTGCACAACT TAGGTTATTT TTGCTTCCGA ATTTGAATGA AAACTTAAAT GCCATGGATT 2340
 30 TTTTCTTTT GCAAGACACC TGTATATCAT CTGTTTAA TGTAAATGTC CCCTTATGCT 2400
 TTTGAAATAA ATTTCTTTT GTAATTTTAA AAAAAA 2436

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(2) INFORMATION FOR SEQ ID NO: 277:

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- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 782 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 277:

GCCACTGACT TCTCCACCC TTCTGTCTCC CCCATAATAG TTTATTTGGT TGGTCTGGAC 60
 50 TCACTTGTGG CCTTTRATTA AATTCCTAAG GGCCTGAAG AAGACATTTT TACTGCAGAG 120
 GGTTAGAGGC ACTTGAGCAA GGCCCCACA TCCCACTCT GGGAGTTGTG GTGGGAGGAG 180
 GCACCTCTGG GGGATAGGAC CAGACAAGAT AACAGGAGCT CACATGGNAA GCAGAAGCTG 240
 55 TGACAAGTTT AGTAGTCCA AAATGGGTTA TATCCCTTCC CCCTTTACAT CAGAATCTTG 300
 TGAAATGGGA AAACAACAGA AGGAGGGGAT CAAAGATAGC TGATCTCACA TGCTTCCCAG 360
 60 GCAGGGCARA GGTGGGAGTC AAACCCGGGT GACAGGTGGG TGGAGAGCCC TGTTTGAGGT 420

5 TGTGGCTGAT CCCTCTCTGG TATTAGTTTT TCCCCTGGGA GCAGGAAGCC CTAGGAAGAG 480
GGGACTGCAG GGTCCCCRGG GGATCTTTCC TCCCTCCCCT GCATGAGGCA GAGGCAAGCT 540
GCCTGCCAAC CCCCTCCCTC AAGGAATGGC CTTGCCCAGG AATGCCCACC ACACATACCC 600
TCTTCTTTTT TTCTAGTCAA ACTCTTGTTC ATTCTTTGGC TTGCCTCCCT CCTTCCTCCC 660
10 CTCTCAACCT TTACTTCTGA TTTCTATTTC ATGGAATTTG GGATTGAAGT TAAACTACAA 720
CAGTGCCGCC AACACCAAGT CTTGCAGGAA AAAAATACAA AGAAATTTAA CAAAAAAAAA 780
AA 782
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(2) INFORMATION FOR SEQ ID NO: 278:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 961 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

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(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 278:

30 GAGTTCCGGC TGGAGACCCG TGCTCTGGGC CGGCGCCTTC ACCATGGCCT CGGCAGAGCT 60
GGACTACACC ATCGAGATCC CGGATCAGCC CTGCTGGAGC CAGAAGAACA GCCCCAGCCC 120
AGGTGGGAAG GAGGCAGAAA CTCGGCAGCC TGTGGTGATT CTYTTGGGCT GGGGTGGCTG 180
35 CAAGGACAAG AACCTTGCCA AGTACAGTGC CATCTACCAC AAAAGGGGCT GCATCGTAAT 240
CCGATACACA GCCCCGTGGC ACATGGTCTT CTCTCCGAG TCACTGGGTA TCCCTTCACT 300
TCGTGTTTTG GCCCAGAAGC TGCTCGAGCT GCTCTTTGAT TATGAGATTG AGAAGGAGCC 360
40 CCTGCTCTTC CATGTCTTCA GCAACGGTGG CGTCATGCTG TACCGCTACG TGCTGGAGCT 420
CCTGCAGACC CGTCGCTTCT GCCGCCTGCG TGTGGTGGC ACCATCTTTG ACAGCGCTCC 480
45 TGGTGACACC AACCTGGTAG GGGCTCTGCG GGCCCTGGCA GCCATCCTGG AGCGCCGGC 540
CGCCATGCTG CGCTGTTC TGCTGGTGGC CTTTGCCCTG GTGGTCGTCC TGTTCACGT 600
CCTGCTTGCT CCCATCACAG CCTCTTCCA CACCCACTTC TATGACAGGC TACAGGACGC 660
50 GGGCTCTCGC TGGCCCGAGC TCTACCTCTA YTCGAGGGCT GACGAAGTAG TCCTGGCCAG 720
AGACATAGAA CGCATGGTGG AGGCACGCCT GGCACGCCCG GTCTGGCCG GTTCTGTGGA 780
55 TTTCGTGTCA TCTGCACACG TCAGCCACCT CCGTACTAC CTTACTTACT ACACAAGCCT 840
CTGTGTCGAC TTCATGCGCA ACTGCGTCCG CTGCTGAGGC CATGCTCCA TCTCAMCTCT 900
GCTCCAGAAA TAAATGCCTG ACAMCTCCCC AAAAAAAAAA AAAAAAAAAA ACTCGAGGGG 960
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961

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(2) INFORMATION FOR SEQ ID NO: 279:

(i) SEQUENCE CHARACTERISTICS:

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(A) LENGTH: 1228 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 279:

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CGCGCTTTGC AGTTCGGTCT CCTGGTGTAC GGCCAACGCC AAGTAGGGGA TTGCGTTCCC 60

TCCAGTCGCA GCCCTATCAG ATTTGGATAT GTCCCTCATA TTTGATTGGA TTTACAGTGG 120

20

TTTCAGCAGT GTGCTACAGT TTTTAGGATT ATATAAGAAA ACTGGTAAAC TGGTATTTCT 180

TGGATTGGAT AATGCAGGAA AAACAACATT GCTACACATG CTAAAAGATG ACAGACTTGG 240

25

ACAACATGTC CCAACATTAC ATCCCACTTC CGAAGAACTG ACCATTGCTG GCATGACGTT 300

TACAACTTTT GATCTGGGTG GACATGTTCA AGCTCGAAGA GTGTGGAAAA ACTACCTTCC 360

TGCTATCAAT GGCATTGTAT TTCTGGTGGA TTGTGCAGAC CACGAAAGGC TGTTAGAGTC 420

30

AAAAGAAGAA CTTGATTAC TAATGACAGA TGAAACCATT GCTAATGTGC CTATACTGAT 480

TCTTGGGAAT AAGATCGACA GACCTGAAGC CATCAGTGAA GAGAGGTTGC GAGAGATGTT 540

35

TGGTTTATAT GGTGACACAA CAGGAAAGGG GAGTATATCT CTGAAAGAAC TGAATGCCCG 600

ACCCCTAGAA GTTTTCATGT GTAGTGTGCT CAAAAGACAA GGTACGGAG AAGGCTTCCG 660

CTGGATGGCA CAGTACATTG ATTAACACAA ACTCACATTG GTTCCAGGTC TCAACGTTCA 720

40

GGCTTACTCA GAGATTGAT TGCTCAACAT GCATAACTTG AATTCAATAG ACTTTTGCTG 780

GTTATAAAAC AGATGTTTTT TAGATTATTA ATATTAAATC AACTTAATTT GAATGAGAAT 840

TGAAAACTGA TTCAAGTAAG TTTGAGTATC ACAATGTTAG CTTTCTAATT CCATAAAAGT 900

45

ACTTGGTTTT TACAGTTTAT AATCTGACAT CACCCAGCG CCATTTGTAA AGAGCAACTT 960

TCCAGCAGTA CATTTGAAGC ACTTTTAAAC AACATGAAAC TATAAACCAT ATTTAAAAGC 1020

50

TCATCATGTT AAATTTTTTA TGTACTTTTC TGGAACTAGT TTTTAAATTT TAGATTATAT 1080

GTCCACCTAT CKTAAGTGTA CAGTTAATAA TTAGCTTATT CAATGATTGC ATGATGCCTT 1140

ACAGTTTTCA ATAACTTTTT TTCTTATGCA AACGTCATGC AATAAAACAA ACTCTAATGT 1200

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TTGGCAAAAA AAAAAAAAAA AAANTCGA 1228

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(2) INFORMATION FOR SEQ ID NO: 280:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1327 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 280:

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TCTCGGGTCT CGGGACAGGT GAGCACCTTG ATGAAGGCCA CGGTCTTGAT GCGGCACCTG 60
 GCGGGGTGCA GGAGATCGTG GCGGCCCTCC GCAAGGGCGS CGGAGACCGG TTACAGGTGA 120
 TTTCTGATTT TRACATGACC TTGAGCAGGT TTGCATATAA TGGAAAGCGA TGCCCTTCTT 180
 CTTACAATAT TCTGGATAAT AGCAAGATCA TCAGTGAGGA GTGTGCGAAA GAGCTCACAG 240
 CGCTCCTTCA CCACTATTAC CCAATTGAGA TCGACCCACA CCGGACCGTC AAGGAGAAGC 300
 TACCTCATAT GGTGGAATGG TGGACCAAAG CGCACAATCT CCTATGTCAG CAGAAGATTG 360
 AGAAGTTTCA GATAGCCCAG GTGGTTAGAG AGTCCAATGC AATGCTCAGG GAGGGATATA 420
 AGACCTTCTT CAACACACTC TACCATAACA ACATTCCCCT TTTCATCTTT TCTGCGGGCA 480
 TTGGTGATAT CCTGGAAGAA ATTATCCGAC AGATGAAAGT GTTCCACCCC AACATCCACA 540
 TCGTGCTTAA CTACATGGAT TTTAATGAAG ATGGTTTTCT CCAGGGATTT AAGGGCCAGC 600
 TGATACACAC ATACAACAAG AACAGCTCTG TGTGTGAGAA CTGTGGTTAC TTCCAGCAAC 660
 TTGAGGGCAA AACCAATGTC ATCCTGCTGG GAGACTCTAT CGGGGACCTC ACCATGGCCG 720
 ATGGGGTTCC TGGTGTGCAG AACATTCTCA AAATTGGCTT CCTGAATGAC AAGGTGGAGG 780
 AGCGGCGGGA NCGCTAACAT GGACTCCTAT GACATCGTGC TGGAGAAGGA CGAGACTCTG 840
 GATGTGGTCA ACGGGCTACT GCAGCACATC CTGTGCCNAG GGGGTCCAGC TGGAGATGCA 900
 AGGCCCTTGA AGGCGCAGGC TCCNAAGKCC SCTGCAGGCC GTGGTGAGGA GGGGCGCCTC 960
 CCCAGAGTCT GCTCCCCCGT GAACACAGAG CAGAGCCAGG GTGGCCAGCA GTGGCTGGGT 1020
 CCTTCCGCGC CCCTCCGTCC TCCTTTCCCT GAGCACCTTC ATCACCAGAG GCTTGAAGGA 1080
 ACCCCGCCAT GTGGCAGGGC ACAGGCACTG TTCCTGGTGA ACCTTGGACC ACAGCATGTC 1140
 AGTGCTCTAG GGATTGTCTA CTCCAGGGAT TTTCTTCAAA ATTTTAAAC ATGGGAAGTT 1200
 CAAACAAATA TAATGTGTGA AACAGATCAA AATTTTAAA ATGAAAAAA AGCTGCTCTG 1260
 ATTCAGGGGA TGTGGGTCCG GGTAGAACCT GGACCTCTTG GCCTGGGGGC ACATGGGATG 1320
 CTTCTAG 1327

60 (2) INFORMATION FOR SEQ ID NO: 281:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 799 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 281:

10 TCACCCGTGCC TACAGCGTGG AGCTCAGATG ACTGCGCCCT CCACGGTCAC TGTGAGCAGG 60
TGGTATTACAC AGCCTGCATG ACCCTCACGG CCAGCCCTGG GGTGTTCCCC GTCACGTGTG 120
GGCTTTGGCT GAAGCCTAAT TCCACAGCTC CTGTGTTTTT GAGAGAGACT GAGAGAACCA 180
15 TAATCCTTGC CTGCTGAACC CAGCCTGGGC CTGGATGCTC TGTGAATACA TTATCTTGCG 240
ATGTTGGGTT ATTCCAGCCA AAGACATTTC AAGTGCCTGT AACTGATTTG TACATATTTA 300
20 TAAAAATCTA TTCAGAAATT GGTCCAATAA TGCACGTGCT TTGCCCTGGG TACAGCCAGA 360
GCCCTTCAAC CCCACCTTGG ACTTGAGGAC CTACCTGATG GGACGTTTCC ACGTGTCTCT 420
AGAGAAGGAT TCCTGGATCT AGCTGGTCAC GACGATGTTT TCACCAAGGT CACAGGAGCA 480
25 TTGCGTCGCT GATGGGGTIG AAGTTTGGTT TGGTTCCTGT TTCAGCCCAA TATGTAGAGA 540
ACATTTGAAA CAGTCTGCAC CTTTGATACG GTATTGCATT TCCAAAGCCA CCAATCCATT 600
30 TTGTGGATTT TATGTGCTG TGGCTTAATA ATCATAGTAA CAACAATAAT ACCTTTTCT 660
CCATTTTGCT TGCAGGAAAC ATACCTTAAG TTTTTTTTGT TTTGTTTTTG TTTTTTTGTT 720
TTTTGTTTTT CTTTATGAAG AAAAAATAAA ATAGTCACAT TTTTAATACY AAAAAATGGA 780
35 CAAAAAAGT CGAGGGGGG 799

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(2) INFORMATION FOR SEQ ID NO: 282:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2196 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 282:

50 AAAGACTCTA ACATCCATGA GCTTGAACAT GAGCAAGAGC CTAATTGTGC CKSCCAGATG 60
GCTGAGCCCT TCCGTACCTT CCGAGATGGA TGGGTCTCCT ACTACAACCA GCCTGTGTTT 120
55 CTGGCTGGCA TGGGTCTTGC TTTCTTTTAT ATGACTGTCC TGGGCTTTGA CTGCATCACC 180
ACAGGGTACG CCTACACTCA GGGACTGACT GTTCCATCC TCAGTATTTT GATGGGAGCA 240
TCAGCTATAA CTGGAATAAT GGGAACTGTA GCTTTTACTT GGCTACGTCG AAAATGTGGT 300
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	TTGGTTCGGA CAGGTCTGAT CTCAGGATTG GCACAGCTTT CCTGTTTGAT CTTGTGTGTG	360
	ATCTCTGTAT TCATGCCTGG AAGCCCCCTG GACTTGTCCG TTTCTCCTTT TGAAGATATC	420
5	CGATCAAGGT TCATTCAAGG AGAGTCAATT ACACCTACCA AGATACCTGA AATTACAAC	480
	GAAATATACA TGTCTAATGG GTCTAATTCT GCTAATATTG TCCCGGAGAC AAGTCCTGAA	540
10	TCTGTGCCCC TAATCTCTGT CAGTCTGCTG TTTGCAGGCG TCATTGCTGC TAGAATCGGT	600
	CTTGGTCTCT TTGATTTAAC TGTGACACAG TTGCTGCAAG AAAATGTAAT TGAATCTGAA	660
	AGAGGCATTA TAAATGGTGT ACAGAACTCC ATGAACTATC TTCTTGATCT TCTGCATTTT	720
15	ATCATGGTCA TCCTGGCTCC AAATCCTGAA GCTTTTGGCT TGCTCGTATT GATTTTCAGTC	780
	TCCTTTGTGG CAATGGGCCA CATTATGTAT TTCCGATTTG CCCAAAATAC TCTGGGAAAC	840
20	AAGCTCTTTG CTGCGGTCC TGATGCAAAA GAAGTTAGGA AGGAAAATCA AGCAAATACA	900
	TCGTGTGTTT GAGACAGTTT AACTGTTGCT ATCCTGTTAC TAGATTATAT AGAGCACATG	960
	TGCTTATTTT GTACTGCAGA ATTCCAATAA ATGGCTGGGT GTTTTGCTCT GTTTTACCA	1020
25	CAGCTGTGCC TTGAGAACTA AAAGCTGTTT AGGAAACCTA AGTCAGCAGA AATTAACTGA	1080
	TTAATTTCCC TTATGTTGAG GCATGGAAAA AAAATTGGA AAGAAAACT CAGTTTAAAT	1140
30	ACGGAGACTA TAATGATAAC ACTGAATTCC CCTATTTCTC ATGAGTAGAT ACAATCTTAC	1200
	GTAAAAGAGT GGTTAGTCAC GTGAATTCAG TTATCATTTG ACAGATTCTT ATCTGTACTA	1260
	GAATTCAGAT ATGTCAGTTT TCTGCAAAAC TCACTCTTGT TCAAGACTAG CTAATTTATT	1320
35	TTTTTGCATC TTAGTTATTT TTA AAAACAA ATTCTTCAAG TATGAAGACT AAATTTTGAT	1380
	AACTAATATT ATCCTTATTG ATCCTATTGA TCTTAAGGTA TTTACATGTA TGTGGAAAA	1440
40	CAAAACACTT AACTAGAATT CTCTAATAAG GTTTATGGTT TAGCTTAAAG AGCACCTTTG	1500
	TATTTTATT ATCAGATGGG GCAACATATT GTATGAAGCA TATGTAGCAC TTCACAGCAT	1560
	GGTTATCATG TAAGCTGCAG GTAGAAGCAA AGCTGTAAAG TAGATTTATC ACACAATGAC	1620
45	TGCATACAGA CTTCAAATAT GTCAATAGTT TGGTCATAGA ACCTAGAAGC CAAAAGCCAC	1680
	ACAGAAGGGC AAGAATCCCA ATTTAACTCA TGTTATCATC ATTAGTGATC TGTGTGTAG	1740
50	AACATGAGGG TGTAAGCCTT CAGCCTGGCA AGTTACATGT AGAAAGCCCA CACTTGTGAA	1800
	GGTTTTGTTT TACAAATCAC TTGATTTAAC AACTCAGGT AGAATATTTT TATTTTACT	1860
	GTTTTATACC CAGAAGTTAT TTCTACATTG TTCTACAGCA AGAATATTCA TAAAAGTATC	1920
55	CCTTTCAAAT GCCTTTGAGA AGAATAGAAG AAAAAAGTT TGTATATATT TTA AAAAATT	1980
	GTTTTAAAG TCAGTTTGCA ACATGTCTGT ACCAAGATGG TACTTTGCCT TAACCGTTTA	2040
60	TATGCACTTT CATGGAGACT GCAATACGTT GCTATGAGCA CTTTCTTTAT CCTTGGAGTT	2100

TAATCCTTTG CTTTCATCTTT CTACAGTATG ACATAATGAT TTGCTATGTT GTAAAAATCTT 2160
 TGTAAAAAAT TTCTATATAA AATATTTGAA ACTTAA 2196

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(2) INFORMATION FOR SEQ ID NO: 283:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1185 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 283:

GCAGTTAAGG CTTCTGATAA GGAAAGAGAG TCTGAACAGA GCACACACAT CTGGAGCTCC 60
 20 AGGAGTGGGG GATGCAGCAT CAGATTCCAT CTTGAATTTT TGCTAAAATA CTTTGTACTC 120
 ATAATGGATC TCAACAAAGA TCTGTATTTT ATCTGTGGCT CCATCTTCCC TCTGGGTCAA 180
 25 GTAGATGTTA AGCTGGACCT TGGCAGCCTT CTTAACATGA AGAGATCTAG CTAGACAGAC 240
 AGACTCCCCC ATTTATGGGA ACAAGAATTC AATTTATTCT CTATTTATAA AACATTTTTT 300
 TAAAGTGCCT TGGGTATAAA AATCTAAATG TCTGCGGTGT GATCAGTCAG GAGCACGTAA 360
 30 CTATCACTCT TCGCATCCTT TGGTCACTGG GAGATCCTTT GGGGGCTGGG AGGTCCTTCT 420
 GTCCCAGGCT AAAGGAAAAG CTTCAACAAG GTAAGAGCCA CAGAACCCTC GGCAAGAAAG 480
 35 GCCGGTCAGG GAGAATGAAT GGTACAGAGA GGAAAGGAAG GAAAGGGGGT GGAACAGAGG 540
 TAGAAGGCAA GGAAGGGATG CCGCACTGGA GACCGATGGG GACACTCTAA TTGTGCAAGA 600
 GGGAGGATCT TCCTTCTTGA ATGCTGAACA CAGCTAGTCT GAACCTTCCT TGGAAAGTCC 660
 40 AGCTGTTTGC CCATGCATAG GGCCAACCTT CCCTGCAAAG CAGCAAATGT GGCTTCTATC 720
 AGGAAGGAAA AGTATCCATC AGTGTGACAA GAGGTCACCT TCGAACTTGC ATGAACTCCT 780
 45 TGCGCAGCCA CAAAGAGTCC TGGTAGAAGT GAGGATCGCC TAGTCTTACG GCTGTCCGTT 840
 TATAGAAGTA GCAGTACAAC ACTGCTGCTA GTCTCTGGAA TACAAACAGC ATTTGAAGTC 900
 CATCTGTCCA TATGAAGCTG TTGGAGTTTT TCCAGCGTAA GTTCATGACC CAGACATGAA 960
 50 GGGAGATGCT GAGGGCAAAG TACACAGCTG TCAGGATGAT GGTCCCTTTG AACTTATGGA 1020
 ATAGGAGGTT GACCAGGCCA GCCTGGAAGA CGAAGGTGTT GAAGAACATG AGGAAAATGA 1080
 55 TGATGATGTT GAAGAGGACT GCAATATCCT GGATGCACTG AGGGAGAGGY TTCTAGTTCC 1140
 TTGGAATGAG AGCTGTTTCC CTGCTCTTAA GGCAAGCACC TCCAA 1185

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(2) INFORMATION FOR SEQ ID NO: 284:

(i) SEQUENCE CHARACTERISTICS:

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(A) LENGTH: 1634 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 284:

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AGGGAAAGGG GAGGGTAGCG GGAGGGTAGC AGGTGAGTTC CTAGGGCTGG AAGGTTTAGC 60

AGCAGCCTGG TGCAGTGCCC TGTCATCAAG ACAAACCCAC GGTCTTCTG GGTGCCTACC 120

15

AAGCTTGGTT TGTACAAAAG CAAGGTGGGA GTCTATTTTT GTACATGAGA TACATCACAC 180

TTACCTGTGG GCCAGTATTG TGAAGTGAGT CTGAGTTGTT TACACTGATG CCTTCCCTGC 240

CCACCACAAA TTGTGTACAT AGTCTTCAGA TGATACCACC CCTTTCCCCA GCTCCCAACC 300

20

AAGAGCTGGT TCTAGGCCTG TGTATATATGT CATATTTAGC STTTTATAT ATGACCTTTG 360

ATTTCTGTTG TTTGTATTTT AGCACAGTGT ATGCACCTTC ATTTAAATAC ATCTGTGTGC 420

25

ATACAGATAC GCATATATGT GTGTGCGTAT GCATATATCT CTCATCTGTA GTTTCCAAGA 480

GTTTCACTGA AGCAGATGGA GTCTGCAGC CCAGGAGACA CCCTGCATCC CTGCTAATAG 540

TGTTTGCCAC AAGTATTAGT GAGTCTTCCT TATTAATAAT TTCATTTTCA AAGACTGAAG 600

30

CAAAGCTGAT AGTGTGCTG GTTCTTTGG CAGCTAAGTG AGGGTCTTGG GATGACTTGC 660

TGTTTCTCTC AAGCTGCACT TTGGGGCCAT CTCTGCAGTA TTAGCCCCCT TTTTGCTTGG 720

35

TGGTACTCTG TCTGTGCCTG TGTGTGTGTG TGATAGTCAC TCTTGCATGG CTTCCATGTC 780

TGGTTTGTGG CATTGAGGGA TAAGGTGCTG AAGCCAGAGC ATTTGCAGTT TGTGAGGC 840

CTCGTTGCCA ATGATAGATC ACTCCTGTTG ACCTGGTATG TCTGCTTGCT TGCTGCTTTT 900

40

CCTTGCTTTC TCTTGAAGA GGAAAGGACT CTGGTCAGGC CCAGGCTGAG TGAGATGAGC 960

TGCAGCTGGC TCATGGCCTT CTTAGAGCAG AGAGAGGAGT ATGTCATTTT ACTAAGTTCC 1020

45

TAAACAAACA TTTATGCAGG CAACACTCCT TGCAGATCCA GAACTGAGG CACAATAGGG 1080

TTATGACTTG CTCAAGAATA TGTAGCTGCT AGGGGGTAAA TCAAGGCATC ACAATTCTG 1140

TTCAGCGGGC AGGAATAGGC TGTGAATTGC TAGCACTTTT TTTTMTTAAG CAATTACTTT 1200

50

TTGACTTGTT CCTCTGAAAG TGCAAGAGGC GTACACCTTT CCCAAATGTA GACTAGAATC 1260

TGCAGGATGC CACCCACTGT ATAGTTCTGC TTTCCAGAG AGGAAGAACT TTTAGAAACC 1320

55

AAATGATCTT AATTGTTATT GCCCACCCCT GGCTTTTCCG GGTAGAAAAT TCACAGTAGG 1380

AATGATTGTT AAGAGAGAGT GCTTGGAACC ATGGGTAAAC AGGAAAGGCT ACCTAACTTC 1440

ACATATCTGC AACCAGAGCA GCCACCAAGC ATTACTTAGC AGCAGGAAAA TGATTGTATT 1500

60

TGAGTTCCTG TGTGTCCAAA ACTGAGGCAC CATGTTCTTT GAAAACATGC CACCTCAAGG 1560
 CTGGGCGCGG TGGCTCACAC CTGTAATCCC AGCAYTTTGG GGAGGCCSAG GGCGGGGCGG 1620
 5 KTTACCGGG GGTC 1634

10 (2) INFORMATION FOR SEQ ID NO: 285:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1795 base pairs
 (B) TYPE: nucleic acid
 15 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 285:

20 TTCCCCCAG GTTGGCTTCC TTCGATTCCT TTTCTTGGTA TCAACGTTTG ATTGGAAGAA 60
 CAACCCCTC TTTGTCAACC TCAATAATGA GCTCACTGTG GAGGAGCAGC TCGGGCACAG 120
 CTCMCCGYA TGGTCATTGT TACCCCCCAA GACCGCAAAA ACTCTGTGTG GACACAGGAT 180
 25 GGACCCCTCAG CCCAGATCCT GCAGCAGCTT GTGGTCTGG CAGCTGAAGC CCTGCCCATG 240
 TTAGAGAAGC AGCTCATGGA TCCCCGGGGA CCTGGGGACA TCAGGACAGT GTTCCGGCCG 300
 30 CCCTTGGACA TTTACGACGT GCTGATCGC CTGTYTCTTC GCCATATCCC GCGGCACCGC 360
 AGGCTTGTGG ACTCGCCAGY TGCTCTCTTC TGCCGGGGCC TGCTCAGCCA GCCGGGGCCC 420
 TCATCCCTGA TGCCCGTGCT GGGTNATGAT CCTNCTCAGC TCTATCTGAC GCAGCTCAGG 480
 35 GAGGCCCTTG GGGATCTGGC CCTTTTCTTC TATGACCAGC ATGGTGAGGA GGTGATTGGT 540
 GTCTCTGGA AGCCACCCAG CTTCACCCG CAGCCCTTCA AGGCCTCCAG CACAAAGGGG 600
 40 CGCATGGTGA TGTCTCGAGG TGGGGAGCTA GTAATGGTGC CCAATGTTGA AGCAATCCTG 660
 GAGGACTTTG CTGTGCTGGG TGAAGGCCTG GTGCAGACTG TGGAGGCCCG AAGTGAGAGG 720
 TGGACTGTGT GATCCCAGCT CTGGAGCAAG CTGTAGACGG ACAGCAGGAC ATTGGACCTC 780
 45 TAGAGCAAGA TGTCAGTAGG ATGACCTCCA CCCTCCTTGG ACATGAATCC TCCATGGAGG 840
 GCCTGCTGGC TGAACATGCT GAATCATCTC CAACAAAACC CAGCCCCAAC TTTCTCTCTG 900
 50 ATGCTCCAGC ATTGGGGCAG GGGCATGGTG GCCCATGTAG TCTCCTGGGC CTCACCATCC 960
 CAGAAGAGGA GTGGGAGCCA GCTCAGAGAA GGAAGTGAAC CCAGGAGATC CATCCACCTA 1020
 TTAGCCCTGG GCCTGGACCT CCCTGCGATT TCCCACTCCT TTCTTAGTCT TCTTCCAGAA 1080
 55 ACAGAGAAGG GGATGTGTGC CTGGGAGAGG CTCTGTCTCC TTCTGTCTGC CAGGACCTGT 1140
 GCCTAGACTT AGCATGCCCT TCACTGCAGT GTCAGGCCTT TAGATGGGAC CCAGCGAAAA 1200
 60 TGTGGCCCTT CTGAGTCACA TCACCGACAC TGAGCAGTGG AAAGGGGCTA TATGTGTATG 1260

AATAGACCAC ATTGAAGGAG CACAATGCCC TCCTGTGTTG ATGCCACTTC CCAGGGTGGA 1320
 GACAGTGGAA AAGAACCGAG GACAGGAAAG GATTGGGTAG GTGAAGGGGT CAGGGGACTG 1380
 5 GTAGTCACCC AATCTTGGAG AGGTGCAAAA AGCACTGGGG GCTACCCGTT AGCTGCATCT 1440
 GCCCTGGCTG TTTGCCCGTT CATGTCACAA ACTGCCACTA CTATGTACCT GCAGTGGGGT 1500
 10 TGCAGAGATG GGGGAGACTC AAGTCTTACT CCCCAGGAGC TCCCAGGGCC CAAGGAGGAG 1560
 AATGCTGCCT CCTTTCAGTC TGGTCTACAC CCACCTTCTG GTAGCCTCTC TGCTTCCTGT 1620
 AATTCTGGCT GTTTTCCAG ACTCAGCTCA AATAGTGCCC CTCCTTAAGC CCATCCCTCG 1680
 15 CCCCCAGCCT GAGGTGATCT TTCCCTCCTC TGAACTATTA GAGCAGTTAC TGTCTGTTCA 1740
 GTTCGTTTGG CAGGCACACA CAGTGGCATA AATTCTATTG TTTTGAAGTC TGATT 1795
 20

(2) INFORMATION FOR SEQ ID NO: 286:

25 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 858 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 30 (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 286:

TCTGCTTTCG GTGCTGCGTG TACTGCTGGG CGGCTTCTTC GCGCTCGTGG GGTGGCCAA 60
 35 GCTCTCGGAG GAGATCTCGG CTCCAGTTTC GGAGCGGATG AATGCCCTGT TCGTGCAGTT 120
 TGCTGAGGTG TTCCCGCTGA AGGTATTTGG CTACCAGCCA GATCCCCTGA ACTACCAAAT 180
 40 AGCTGTGGGC TTTCTGGAAC TGCTGGCTGG GTTGTCTGCTG GTCATGGGCC CACCGATGCT 240
 GCAAGAGATC AGTAACTTGT TCTTGATTCT GCTCATGATG GGGGCTATCT TCACCTTGGC 300
 AGCTCTGAAA GAGTCACTAA GCACCTGTAT CCCAGCCATT GTCTGCCTGG GGTTCCTGCT 360
 45 GCTGCTGAAT GTCGGCCAGC TCTTAGCCCA GACTAAGAAG GTGGTCAGAC CCACTAGGAA 420
 GAAGACTCTA AGTACATTCA AGGAATCCTG GAAGTAGAGC ATCTCTGTCT CTTTATGCCA 480
 TGCAGCTGTC ACAGCAGGAA CATGGTAGAA CACAGAGTCT ATCATCTTGT TACCAGTATA 540
 50 ATATCCAGGG TCAGCCAGTG TTGAAAGAGA CATTTTGTCT ACCTGGCACT GCTTCTCTTT 600
 TTTAGCTTTA CTACTCTTTT GTGAGGAGTA CATGTTATGC ATATTAACAT TCCTCATGTC 660
 55 ATATGAAAAT ACAAATAAG CAGAAAAGAA ATTTAAATCA ACCAAAATTC TGATGCCCCA 720
 AATAACCACT TTTAATGCCT TGGTGTAAGT ATACCTCTGA ACTTTTTTCT GTGCCTTTAA 780
 ACAGATATAT ATTTTTTTTT AATGAAAATA AAACCATATA TCCTATTTTA TTTCTCCTT 840
 60

TTAAACCTT ATAACTA

858

5

(2) INFORMATION FOR SEQ ID NO: 287:

(i) SEQUENCE CHARACTERISTICS:

10

(A) LENGTH: 915 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

15

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 287:

20

GAATTCGGCA CGAGCGCGGC CATGGCGCTC CTGCTTTCGG TGCTGCGTGT ACTGCTGGGC 60

GGCTTCTTCG CGCTCGTGGG GTTGGCCAAG CTCTCGGAGG AGATCTCGGC TCCAGTTTCG 120

GAGCGGATGA ATGCCCTGTT CGTGCAGTTT GCTGAGGTGT TCCCGCTGAA GGTATTTGGC 180

TACCAGCCAG ATCCCTGAA CTACCAAATA GCTGTGGGCT TTCTGGAACT GCTGGCTGGG 240

25

TTGCTGCTGG TCATGGGCCC ACCGATGCTG CAAGAGATCA GTAAC TTGTTTCTG 300

CTCATGATGG GGGCTATCTT CACCTTGGCA GCTCTGAAAG AGTCACTAAG CACCTGTATC 360

CCAGCCATTG TCTGCCTGGG GTTCTCTGCTG CTGCTGAATG TCGGCCAGCT CTTAGCCCGAG 420

30

ACTAAGAAGG TGGTCAGACC CACTAGGAAG AAGACTCTAA GTACATTCAA GGAATCCTGG 480

AAGTAGAGCA TCTCTGTCTC TTTATGCCAT GCAGCTGTCA CAGCAGGAAC ATGGTAGAAC 540

35

ACAGAGTCTA TCATCTTGTT ACCAGTATAA TATCCAGGGT CAGCCAGTGT TGAAAGAGAC 600

ATTTTGTCTA CCTGGCACTG CTTTCTCTTT TTAGCTTTAC TACTCTTTTG TGAGGAGTAC 660

ATGTTATGCA TATTAACATT CCTCATGTCA TATGAAAATA CAAAATAAGC AGAAAAGAAA 720

40

TTTAAATCAA CCAAAATTCT GATGCCCCAA ATAACCACTT TTAATGCCCTT GGTGTAAGTA 780

TACCTCTGAA CTTTTTCTG TGCCTTTAAA CAGATATATA TTTTTTTTWA ATGAAAATAA 840

45

AACCATATAT CCTATTTTAT TTCTCTCTTT TAAACCTTA TAAACTATAA MAAAAAAAAA 900

AAAAAAAAAA CTCGA 915

50

(2) INFORMATION FOR SEQ ID NO: 288:

(i) SEQUENCE CHARACTERISTICS:

55

(A) LENGTH: 1517 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 288:

CCTTGTGGCA ACTAGTGGGT CCCCCGGGCT GCAGNAATTC GGGCAGTGGT TCTGNGTCTG 60
 AAGATACTCT GAGTTCTCTT GAGAGATCCA AAGGCTCCGG GAGCAGACCC CCAACCCCCA 120
 5 AAAGCAGCCC TCAGAAGACC AGGAAGAGCC CTCAGGTGAC CAGGGGTAGC CCTCAGAAGA 180
 CCAGCTGTAG CCTCAGAAG ACCAGGCAGA GCCCTCAGAC GCTGAAGCGG AGCCGAGTGA 240
 CCACCTCACT TGAAGCTTTG CCCACAGGAC AGTGCTGACA GACAAGAGTG GGCGACAGTG 300
 10 GAAGCTGAAG TCCTTCCAGA CCAGGGACAA CCAGGGCATT CTCTATGAAG CTGCACCCAC 360
 CTCCACCTC ACCTGTGACT CAGGACCACA GAAGCAAAAG TTCTCACTCA AACTGGATGC 420
 15 CAAGGATGGG CGCTTGTTC A TGAGCAGAA CTCTTCCAG CGGGCCGCCA AGCCTCTGCA 480
 AGTCAACAAG TGAAGAAGC TGTACTCGAC CCCACTGCTG GCCATCCCTA CCTGCATGGG 540
 TTTCGGTGTT CACCAGGACA AATACAGGTT CTTCGTGTTA CCCAGCCTGG GGAGGAGCCT 600
 20 TCAGTCGGCC CTGGATGTCA GCCCAAAGCA TGTGCTGTGC AGAGAGGTCT GTGCTGCAGG 660
 TGGCCTGCCG GCTGCTGGAT GCCCTGGAGT TCCTCCATGA GAATGAGTAT GTTCATGGAA 720
 25 ATGTGACAGC TGAAAATATC TTGTGGATC CAGAGGACCA GAGTCAGGTG ACTTTGGCAG 780
 GCTATGGCTT CGCNTTCCGC TATTGCCCAA GTGGCAAACA CGTGGCCTAC GTGGAAGGCA 840
 GCAGGAGCCY TCACGAGGGG GACCTTGAGT TTCAATTAGCA TGGACCTGCA CAAGGGATGC 900
 30 GGGCCCTCCC GCCGCRGYGA CCTCCAGAGC CTGGGYTAMT GCATGCTGAA GTGGYTCTAM 960
 GGGTTTCTGC CATGGACAAA TTGCCTTCCA AMAMTGAGGA CATCATGAAG CAAAAACAGA 1020
 35 AGTTGCCCTG GGATTCAATT TAATGTAAGC TKGACTTTGT CATGCCAGAA ACAAGGCTCG 1080
 GTCACCGTCA GCAGTTTGCA GTTTTCCACC TCCWCCAGT TCCTCCGTGT GGTGACCCA 1140
 GATATCTCCG TTATGCAGCC GCCTCCGGGG GACCACCTCC CTCCCTTTGA GTCAGCCACA 1200
 40 GACAGCCTAC TTGACGGCCC CGCTGGCCCC CACATTCAC TGAAGTGTGC GGATGCCACA 1260
 GTGACCCCTC CTCAGGCACA GCATGACCTC CTGAAGTCGA GCCTGCTTGC TTTGAACCTA 1320
 45 CCAGTTAAAA TCTCCTCAAA ATGTTTGGAT ACCGCCATT GGCCCTCAC AGCCACGAGC 1380
 TCCCTGACCA GTGTGCGTGT GTGTGTGTGT GTGTGTCTGT GTGTGTGCTT GGGACGGGTG 1440
 50 GGGAGGTCAC CTTTGGGTGT GCGGTGTGCC CCCAGGACCT GTAAGTAATA AAATCTTTAT 1500
 TTCCAAAAAA AAAAAA 1517

55

(2) INFORMATION FOR SEQ ID NO: 289:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 3865 base pairs

(B) TYPE: nucleic acid

60

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 289:

5 TGGAGGGGGG GAGCTTCCTT GAGCAGTGGG CCCAGGCCTG GCCCTCCACA CTTCATTCTC 60
 TGACCTTTCT CTCTCCTCAT TTCGGTGCAT GTCTTTCTG CAGCTGCCTT TCAGCACAGG 120
 10 TGGTTCCTACT GGGGGCAGCT AACGCTGAGT GACAAGGATG GGAAGCCACA GGTGCATTTT 180
 ACTCAAGTCT TCTCTAGTCA ATGAGGGGCA CCCAGTGCTT CTAGGGCAGG CTGGGTGGTG 240
 15 GTCCCTTAGG TATCAGCCTC TCTTACTGTA CTCTCCGGGA ATGTTAACCT TTCTATTTTC 300
 AGCCTGTGCC ACCTGTCTAG GCAAGCTGGC TTCCCATTTG GCCCTGTGG GTCCACAGCA 360
 GCGTGGCTSC CCCCCAGGGC CACCGCTTCT TTCTTGATCC TCTTTCCTTA ACAGTGACTT 420
 20 GGGCTTGAGT CTGGCAAGGA ACCTTGCTTT TAGCTTCACC ACCAAGGAGA GAGGTTGACA 480
 TGACCTCCCC GCCCCCTCAC CAAGGCTGGG AACAGAGGGG ATGTGGTGAG AGCCAGGTTT 540
 CTCTGGCCCT CTCCAGGGTG TTTTCCACTA GTCACTACTG TCTTCTCCTT GTAGCTAATC 600
 25 AATCAATATT CTTCCTTTCG CTGTGGGCAG TNGGAGAGTG CTGCTGGGTG TACGCTGCAC 660
 CTGCCCCTG AGTGGGGAA AGAGGATAAT CAGTGAGCAC TGTCTGCTC AGAGCTCCTG 720
 30 ATCTACCCCA CCCCCTAGGA TCCAGGACTG GGTCAAAGCT GCATGAAACC AGGCCCTGGC 780
 AGCAACCCTG GGAATGGCTG GAGGTGGGAG AGAACCTGAC TTCTCTTTCC CTCTCCCTCC 840
 TCCAACATTA CTGGAACCTT ATCTGTGTAG GATCTTCTGA GCTTGTTTCC CTGCTGGGTG 900
 35 GGACAGAGGA CAAAGGAGAA GGGAGGGTCT AGAAGAGGCA GCCCTTCTTT GTCTCTGGG 960
 GTAAATGAGC TTGACCTAGA GTAAATGGAG AGACCAAAG CCTCTGATTT TTAATTTCCA 1020
 40 TAAAATGTTA GAAGTATATA TATACATATA TATATTTCTT TAAATTTTGT AGTCTTTGAT 1080
 ATGTCTAAAA ATCCATTCCC TCTGCCCTGA AGCCTGAGTG AGACACATGA AGAAAACGT 1140
 GTTTCATTTA AAGATGTTAA TTAAATGATT GAAACTTGGC TGTGGCTACT GCTTCTTAAT 1200
 45 GTTGGGGGGA CAGGGCAGTG GTCTGGGCCC ACATTTAGAA GGGAAAATGT TTTGCCTGCT 1260
 GCACACATG GACCCAAGTA TGGGCCTCTT CTGCCTAGTA CTGCCAAAGG GACTGTTAAG 1320
 50 GTGTCTTGTC CATCTTCTAC CCCCCACCCC CCATTACGGG TAAAGGRAAC CCCAGACTAG 1380
 GTGAGGGGCC AGCAGCTGCC TCACATTGTG TTCTCTCCTG AGATGGTCCA GCTCACATCC 1440
 AGACACCTTG TTCAGACATT TTATTTGAAT TTATGACAGT GATGGGGATT TGACTGAGAT 1500
 55 GCCTTATGGA GAAGTACCCC ACCCTCTATG AAGACAGAAT CACTCTCTGC CATTCATTCT 1560
 GCCTGATGCT AACAAACACG AGCTGATTTA GGGAGTGTC CAGCCTAGCT GGATCAAGGG 1620
 60 AAATTCAGG AGCCCTGGGG CAGGCCCTGG NCCCCAGTGC CAAGCCTCAG AGTAAGCAGA 1680

	CATTGGGAAA GTTGCCAACC ACTTGGTAGA CCACTAGGTT CTCTGTTTTC CCTTCCCTTT	1740
5	CCTTTTCAAA TCCCACAGTT TCCTGTGGG GAGAAGCTGT AATTAGCCTA GTCCAGGTAC	1800
	CAGATCCCAG CTAGGGGCGC AGCTGNCITG GATAACTCCA AGAAAACCTG GGCACCAGTA	1860
	TTTTTCCAAT TATAAGGACT GTGGCATAAA TTTTAAATG AGTTATATG AAACCAGATT	1920
10	TCTCCAGCTG CCAAGGGAAG AAGGTAGGGC TGGACTCCCT GCTGTGGCCC AGCCCTTGTT	1980
	AGGGGTGGT CTCTCACTGC AGCCAGACAG GATGATCCTG GGTCTGGGG AGGGTAAGCT	2040
15	GCCCTTGCC GAGTTCTGCA CCGAATAAAG AGTCCAAACC CGCTGCTTCC GTGTCTGAG	2100
	AGATGGGTAA ATGGGTGATG GATGGAGCAG ACTGAAGAGA CAGCAGATGA CTCAGTGGTG	2160
	GAAGAAGGGG GGAAGATGCT GGGCTGGCTA GCTAATGTTT CCCCCTTTCA GCGATTTACA	2220
20	GGAAATGGAG CCCAGCTTGG TCATGAAGTT GGTTCGCTTC CACTGTGCGA TGCACTCCTC	2280
	AGAAATTTTG AAGTCAGCCT GCAACTTCTC GAAGACTTTC TTCTTGGGCT TGAGCTCCTC	2340
25	ATCTGGTTGG CCTTTTTCAT AGCCCTTCAC AAACACGTGC TCACCAGGAG CAGAGCCTGC	2400
	CGGAGGGTCC AGAGGTTCAA CTGGCGGTTT ATCCCTTCTA TAGAAGCACA CAGAAGCATG	2460
	CCTTGGGACT CGACTCCTCT CATCTTCTGG GGTTCAGGT TGCACAGCAC CACTACCAGC	2520
30	CTGTCTGCA GTTCTCTCTT GGGCACGAAC TGTACCAGGC CGCTCACCAC AGTCCGTGGT	2580
	TCAGCTTCCC CCACGTCAAT CTCTCTTACA TACAGGCTGT CTGCATCTGG GTGCTTCTCC	2640
35	ACAGTGATGA TTTTCCCCAC ACGGATATCC AGCCGGGATG GGATGACCTC CTCTGGTTCT	2700
	GAATTCTTGG CAGGCCTTTG GCCATTGGCT TCTGCTTTGA GGGATCTGGG TAGGCAGCGC	2760
	TGGCCAGTTT TTTTCAAGGCA GGGGTATTAA ACTTTTCCCG GATTGGATCC AGCAACTTGT	2820
40	TCAGTGCAC TTCAACAGAA TTCTTCAGGT CTCCAGGATG TACAACCTCA GCAGCAAAGT	2880
	CCTTTTCCAG GTCCACGTAA GCTGTGTAGG TTTTGTTC ACCCCATTTC TCATCTCGTA	2940
45	GGATCACAAA CTCGGACTTA AGGGGAAAAA GGACATGCTT GATGAAGGAC AGAACCCCAT	3000
	TGTTCTCCAC ATTTCCTGGC TCACAGAAGG CCTTCTTCAG TTTTTCCTTC ACATCCTCCT	3060
	TCCGATCAAG GAGATCAATC TTGGACTCCT CTCTGAAGA GCTCATTTTG CTGCCTGTTA	3120
50	ATCCTGGAAC CATAGGATTC ATCAGATGGA CCCGTTTGA ATAGCCAAGT GCAGGGAGGT	3180
	ACTTCTCTGC AAAGGTGAAA ATCTTTCTCT GATCAATGCC TCCAAATGG GCATCTACTT	3240
55	TTAAATACTC TTCATCCAAA GCCTGCAGTC CGGGGTATAA GAGGCCACTC AGCAAAGGT	3300
	GCTCCACCTG CTTTACCACC TCAGCTCCAG CCTTCTTGA ATCGTGCTGT GTGACCACGG	3360
	AGGAGAGTCT GTACACATCT AGTGTGTA CTCTGCTGAG CTGGTAATCA GTGCCTTTGA	3420
60	TGAACCTGAG CTCTCCAAG GGCACACCAA TGCTCTCCAG CATTGCTTTG ATCACATTCT	3480

CATAGTAACT GACTCGGAGT TCTAGAAGTT CCCATGGGGC TTTCATGTTA TCCAGGTATG 3540
 CGTGGAGGTC CGCAAACAGA ATTGTTACCT CACACCCTGC CTTTAAGAAG TCTGCAATCT 3600
 5 TTGACATGGG CACAAAGTAA GCCACATGTG GTTTGCCCGT GGTTGCCGTT CCCCAGTAAA 3660
 TTTTAAGTTC CCGCTCCTTC AGTATCTCCT TCAGCTTCTC TTCCCCCAGA ACCTCCTGCA 3720
 10 GGTTCGCGGT GATAAGGTGC AGTTTCTCTT CAGGGCTGGG AGCGTCCCCC ATGGTCCGCT 3780
 ACCCCTGCTT CCCCCGCTCA GCCCAGCACC AGAGCCCTT CCTGGGTCAC CGTCGCCGCC 3840
 GCGTGCCGGG AACTGTCACG CGAGT 3865
 15

(2) INFORMATION FOR SEQ ID NO: 290:

20

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1910 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

25

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 290:

AGGGAGAGGA GGAGAGGGGG TCTGCGCGCG GCCGCTACCC AGAAGCCAGC GGACGGCAGC 60
 30 ACGGAGTGGG CTGTCCCCGA GCCCAGCCCC GAGCGAGCCC CCCCCCGCC CCCGMAGGAC 120
 GCGCCTYCCA GCCAGCCCGA CTCCTAGGAG GAGGGGAGGC GGGAAAGCAG CTCAAGCCTC 180
 35 ACCCACCGCC CTGCCCCCAG CCCC GCCACT CCCAGGCTCC TCGGGA CTG GCGGGTCTC 240
 CTGGGAGTCT CGGAGGGGAC CGNCTGTGCA GACGCCATGG AGTTGGTGCT GGTCTTCCTC 300
 TGCAGCCTGC TGGCCCCCAT GTTCCTGGCC AGTGCAGCTG AAAAGGAGAA GGAAATGGAC 360
 40 CCTTTTCATT ATGATTACCA GACCCTGAGG ATTGGGGGAC TGGTGTTCGC TGTGGTCTC 420
 TTCTCGGTTG GGATCTCTCT TATCCTAAGT CGCAGGTGCA AGTGCAGTTT CAATCAGAAG 480
 45 CCCC GGCCCC CAGGAGATGA GGAAGCCCAG GTGGAGAACC TCATCACCGC CAATGCAACA 540
 GAGCCCCAGA AAGCAGAGAA CTGAAGTGCA GCCATCAGGT GGAAGCCTCT GGAACCTGAG 600
 GCGGCTGCTT GAACCTTTGG ATGCAAATGT CGATGCTTAA GAAAACCGGC CACTTCAGCA 660
 50 ACAGCCCTTT CCCCAGGAGA AGCCAAGAAC TTGTGTGTCC CCCACCTAT CCCCTCTAAC 720
 ACCATCTCTC CACCTGATGA TGCAACTAAC ACTTGCTTCC CCACTGCAGC CTGCGGTCTC 780
 55 GCCCACCCTC CGTGATGTGT GTGTGTGTGT GTGTGTGTGT GACTGTGTGT GTTTGCTAAC 840
 TGTGGTCTTT GTGGCTACTT GTTTGTGGAT GGTATTGTGT TTGTTAGTGA ACTGTGGACT 900
 CGCTTTCCCA GGCAGGGGCT GAGCCACATG GCCATCTGCT CCTCCCTGCC CCCGTGGCCC 960
 60

TCCATCACCT TCTGCTCCTA GGAGGCTGCT TGTGCCCCGA GACCAGCCCC CTCCCCTGAT 1020
 TTAGGGATGC GTAGGGTAAG AGCACGGGCA GTGGTCTTCA GTCGTCTTGG GACCTGGGAA 1080
 5 GGTITGCAGC ACTTTGTGAT CATTTCTCAT GGACTCCTTT CACTCCTTTA ACAAAAACCT 1140
 TGCTTCCTTA TCCCACCTGA TCCCAGTCTG AAGGTCTCTT AGCAACTGGA GATACAAAGC 1200
 10 AAGGAGCTGG TGAGCCCAGC GTTGACGTCA GGCAGGCTAT GCCCTTCCGT GGTTAATTTC 1260
 TTCCCAGGGG CTTCACAGAG GAGTCCCCAT CTGCCCCGCC CCTTCACAGA GCGCCCGGGG 1320
 ATCCAGGCC CAGGGCTTCT ACTCTGCCCC TGGGAATGT GTCCCCTGCA TATCTTCTCA 1380
 15 GCAATAACTC CATGGGCTCT GGGACCCTAC CCCTTCCAAC CTTCCTGCT TCTGAGACTT 1440
 CAATCTAGAG CCCAGCTCAT CCAGATGCAG ACTACAGTCC CTGCAATTGG GTCTCTGGCA 1500
 GGCAATAGTT GAAGGACTCC GTTCCGTTG GGGCCAGCAC ACCGGGATGG ATGGAGGGAG 1560
 20 AGCAGAGGCC TTTGCTTCTC TGCCTACGTC CCCTTAGATG GGCAGCAGAG GCAACTCCCG 1620
 CATCCTTTGC TCTGCCTGTC GGTGGTCAGA GCGGTGAGCG AGGTGGGTTG GAGACTCAGC 1680
 25 AGGCTCCGTG CAGCCCTTGG GAACAGTGAG AGGTTGAAG TCATAACGAG AGTGGGAACT 1740
 CAACCCAGAT CCCGCCCTC CTGTCTCTG TGTTCCTCGG GAAACCAACC AAACCGTGCG 1800
 CTGTGACCCA TTGCTGTTCT CTGTATCGTG ATCTATCCTC AACAACAACA GAAAAAAGGA 1860
 30 ATAAATATC CTTTGTTCM TAAAAA AAAAAGGAGG 1910

35

(2) INFORMATION FOR SEQ ID NO: 291:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 3276 base pairs
 40 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 291:

45 GCGACCGTCG TTTGAGTCGT CGCTGCCGCT GCCGCTGCCA CTGCCACTGC CACCTCGCGG 60
 ATCAGGAGCC AGCGTTGTTC GCCCGACGCC TCGCTGCCGG TGGGAGGAAG CGAGAGGGAA 120
 50 GCCGCTTGCG GGTITGTGCG CGCTGCTCGC CCACCGCCTG GAAGAGCCGA GCCCCGGCCC 180
 AGTCGGTCGC TTGCCACCGC TCGTAGCCGT TACCCGCGGG CCGCCACAGC CGCCGGCCGG 240
 GAGAGGCGCG CGCCATGGCT TCTGGAGCCG ATTCAAAGG TGATGACCTA TCAACAGCCA 300
 55 TTCTCAAACA GAAGAACCGT CCCAATCGGT TAATGTGTTA TGAAGCCATC AATGAGGACA 360
 ACAGTGTGGT GTCCTGTGCC CAGCCCAAGA TGGATGAATT GCAGTTGTTC CGAGGTGACA 420
 60 CAGTGTGCT GAAAGGAAAG AAGAGACGAG AAGCTGTTTG CATCGTCCCT TCTGATGATA 480

	CTTGTTCCTGA TGAGAAGATT CGGATGAATA GAGTTGTTCG GAATAACCTT CGTGTACGCC	540
- 5	TAGGGGATGT CATCAGCATC CAGCCATGCC CTGATGTGAA GTACGGCAAA CGTATCCATG	600
	TGCTGCCCAT TGATGACACA GTGGAAGGCA TTTACTGGTAA TCTCTTCGAG GTATACCTTA	660
	AGCCGTACTT CCTGGAAGCG TATCGACCCA TCCGGAAGG AGACATTTTTT CTTGTCCGTG	720
10	GTGGGATGCG TGCTGTGGAG TTCAAAGTGG TGGAAACAGA TCCTAGCCCT TATTGCATTG	780
	TTGCTCCAGA CACAGTGATC CACTGCGAAG GGGAGCCTAT CAAACGAGAG GATGAGGAAG	840
15	AGTCCTTGAA TGAAGTAGGG TATGATGACA TTGGTGGCTG CAGGAAGCAG CTAGCTCAGA	900
	TAAAGGAGAT GGTGGAAC TG CCCCTGAGAC ATCCTGCCCT CTTTAAGGCA ATTGGTGTGA	960
	AGCCTCCTAG AGGAATCCTG CTTTACGGAC CTCTGGAAC AGGAAAGACC CTGATTGCTC	1020
20	GAGCTGTAGC AAATGAGACT GGAGCCTTCT TCTTCTTGAT CAATGGTCCT GAGATCATGA	1080
	GCAAATGCG TGGTGAGTCT GAGAGCAACC TTCGTAAAGC CTTTGAGGAG GCTGAGAAGA	1140
25	ATGCTCCTGC CATCATCTTC ATTGATGAGC TAGATGCCAT CGCTCCCAA AGAGAGAAAA	1200
	CTCATGGCGA GGTGGAGCGG CGCATGTAT CACAGTGTGTT GACCCTCATG GATGGCCTAA	1260
	AGCAGAGGGC ACATGTGATT GTTATGGCAG CAACCAACAG ACCCAACAGC ATTGACCCAG	1320
30	CTCTACGGCG ATTTGGTCGC TTTGACAGGG AGGTAGATAT TGGAATTCCT GATGCTACAG	1380
	GACGCTTAGA GATTCTTCAG ATCCATACCA AGAACATGAA GCTGGCAGAT GATGTGGACC	1440
35	TGGAACAGTA GCCAATGAGA CTCACGGGCA TGTGGGTGCT GACTTAGCAG CCCTGTGCTC	1500
	AGAGGCTGCT CTGCAAGCCA TCCGCAAGAA GATGGATCTC ATTGACCTAG AGGATGAGAC	1560
	CATTGATGCC GAGGTCATGA ACTCTCTAGC AGTTACTATG GATGACTTCC GGTGGGCCTT	1620
40	GAGCCAGAGT AAGCCATCAG CACTGCGGGA AACCCTGGTA GAGGTGCCAC AGGTAACCTG	1680
	GGAAGACATC GGGGGCCTAG AGGATGTCAA ACGTGAGCTA CAGGAGCTGG TCCAGTATCC	1740
45	TGTGGAGCAC CCAGACAAAT TCCTGAAGTT TGGCATGACA CCTTCCAAGG GAGTTCTGTT	1800
	CTATGGACCT CTTGGCTGTG GGAAAACCTT GTTGGCCAAA GCCATGCTA ATGAATGCCA	1860
	GGCCAACTTC ATCTCCATCA AGGGTCCTGA GCTGCTCACC ATGTGGTTTG GGGAGTCTGA	1920
50	GGCCAATGTC AGAGAAATCT TTGACAAGGC CCGCCAAGCT GCCCCCTGTG TGCTATTCCTT	1980
	TGATGAGCTG GATTGATTG CCAAGGCTCG TGGAGGTAAC ATTGGAGATG GTGGTGGGGC	2040
55	TGCTGACCGA GTCATCAACC AGATCCTGAC AGAAATGGAT GGCATGTCCA CAAAAAAAAA	2100
	TGTGTTTCATC ATTGGCGCTA CCAACCGGCC TGACATCATT GATCCTGCCA TCCTCAGACC	2160
	TGGCCGTCTT GATCAGCTCA TCTACATCCC ACTTCCTGAT GAGAAGTCCC GTGTTGCCAT	2220
60	CCTCAAGGCT AACCTGCGCA AGTCCCCAGT TGCCAAGGAT GTGGACTTGG AGTTCCTGGC	2280

TAAAATGACT AATGGCTTCT CTGGAGCTGA CCTGACAGAG ATTTGCCAGC GTGCTTGCAA 2340
 GCTGGCCATC CGTGAATCCA TCGAGAGTGA GATTAGGCGA GAACGAGAGA GGCAGACAAA 2400
 5 CCCATCAGCC ATGGAGGTAG AAGAGGATGA TCCAGTGCCT GAGATCCGTC GAGATCACTT 2460
 TGAAGAAGCC ATGCGCTTTG CGCGCCGTTC TGTCACTGAC AATGACATTG GGAAGTATGA 2520
 10 GATGTTTGCC CAGACCCTTC AGCAGAGTCG GGGCTTTGGC AGCTTCAGAT TCCCTTCAGG 2580
 GAACCAAGGT GGAGCTGGCC CCAGTCAGGG CAGTGGAGGC GGCACAGGTG GCAGTGTATA 2640
 CACAGAAGAC AATGATGATG ACCTGTATGG CTAAGTGGTG GTGGCCAGCG TGCAGTGAGC 2700
 15 TGGCCTGCCT GGACCTTGTT CCCTGGGGGT GGGGCGCCTT GCCCAGGAGA GGGACCAGGG 2760
 GTGCGCCAC AGCCTGCTCC ATTCTCCAGT CTGAACAGTT CAGCTACAGT CTGACTCTGG 2820
 20 ACAGGGGGTT TCTGTTGCAA AAATACAAAA CAAAAGCGAT AAAATAAAAG CGATTTTCAT 2880
 TTGGTAGGCG GAGAGTGAAT TACCAACAGG GAATTGGGCC TTGGGCTATG CCATTTCTGT 2940
 TGTAGTTTGG GGCAGTGCAG GGGACCTGTG TGGGTGTGA ACCAAGGCAC TACTGCCACC 3000
 25 TGCCACAGTA AAGCATCTGC ACTTGACTCA ATGCTGCCCG AGCCCTCCCT TCCCCCTATC 3060
 CAACCTGGGT AGGTGGGTAG GGGCCACAGT TGCTGGATGT TTATATAGAG AGTAGGTGA 3120
 30 TTTATTTTAC ATGCTTTTGA GTTAATGTTG GAAACTAAT CACAAGCAGT TTCTAAACCA 3180
 AAAAATGACA TGTGTAAAA GGACAATAAA CGTTGGGTCN AAATGGGWRA AAAAAAAAAA 3240
 AAAAAGGGG GGCCCTCTA AAGNNCCANN CTTCGT 3276
 35

(2) INFORMATION FOR SEQ ID NO: 292:

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(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1695 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

45

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 292:

TTGCAATGGT TGAATTCCCC TCCTCACGCC AGCCTAGGAG AAGAAGTTG TAGTCCCAGA 60
 50 GGTGAGGCAG GAGGCGGCAG TTTCTGGCGG GTGAGGGCGG AGCTGAAGTG ACAGCGGAGG 120
 CGGAAGCAAC GGTCCGTGGG GCGGAGAAGG GGGCTGGCCC CAGGAGGAGG AGGAAACCTT 180
 55 TCCGAGAAAA CAGCAACAAG CTGAGCTGCT GTGACAGAGG GGAACAAGAT GCGGCGCGCC 240
 AAGGGAGCCT CTGGGTGAGG ACCCAACTGG GGCTCCCGCC GCTGCTGCTG CTGACCATGG 300
 CCTTGCCCGG AGGTTCCGGG ACCGCTTCGG CTGAAGCATT TGAATCGGTC TTGGGTGATA 360
 60

	CGGCGTCTTG CCACCGGGCC TGTCAGTTGA CCTACCCCTT GCACACCTAC CCTAAGGAAG	420
	AGGAGTTGTA CGCATGTGAG AGAGGTTGCA GGCTGTTTTT AATTTGTCAG TTTGTGGATG	480
- 5	ATGGAATTGA CTTAAATCGA ACTAAATTGG AATGTGAATC TGCATGTACA GAAGCATATT	540
	CCCAATCTGA TGAGCAATAT GCTTGCCATC TTGGTTGCCA GAATCAGCTG CCATTGCGTG	600
10	AACTGAGACA AGAACAACCT ATGTCCCTGA TGCCAAAAAT GCACCTACTC TTTCCTCTAA	660
	CTCTGGTGAG GTCATTCTGG AGTGACATGA TGGACTCCGC ACAGAGCTTC ATAACCTCTT	720
	CATGGACTTT TTATCTTCAA GCCGATGACG GAAAAATAGT TATATTCCAG TCTAAGCCAG	780
15	AAATCCAGTA CGCACCACAT TTGGAGCAGG AGCCTACAAA TTTGAGAGAA TCATCTCTAA	840
	GCAAAATGTC CTATCTGCAA ATGAGAAATT CACAAGCGCA CAGGAATTTT CTGAAGATG	900
20	GAGAAAGTGA TGGCTTTTGA AGATGCCTCT CTCTTAATC TGGGTGGATT TTAACCTACAA	960
	CTCTTGTCCT CTCGGTGATG GTATTGCTTT GGATTTGTTG TGCAACTGTT GCTACAGCTG	1020
	TGGAGCAGTA TGTTCCCTCT GAGAAGCTGA GTATCTATGG TGACTTGGAG TTTATGAATG	1080
25	AACAAAAGCT AAACAGATAT CCAGCTTCTT CTCTTGTTGG TGTTAGATCT AAAACTGAAG	1140
	ATCATGAAGA AGCAGGGCCT CTACCTACAA AAGTGAATCT TGCTCATTTCT GAAATTTAAG	1200
30	CATTTTTCTT TTAAAAGACA AGTGTAAATG ACATCTAAAA TTCCACTCCT CATAGAGCTT	1260
	TTAAAATGGT TTCATTGGAT ATAGGCCTTA AGAAATCACT ATAAAATGCA AATAAAGTTA	1320
	CTCAAATCTG TGAAGACTGT ATTTGCTATA ACTTTATTGG TATTGTTTTT GTAGTAATTT	1380
35	AAGAGGTGGA TGTTTGGGAT TGTATTATTA TTTTACTAAT ATCTGTAGCT ATTTTGTTTT	1440
	TTGCTTTGGT TATTGTTTTT TTCCCTTTTC TTAGCTATGA GCTGATCATT GCTCCTCTC	1500
40	ACCTCCTGCC ATGATACTGT CAGTTACCTT AGTTAACAAG CTGAATATTT AGTAGAAATG	1560
	ATGCTTCTGC TCAGGAATGG CCCACAAATC TGTAAATTGA AATTTAGCAG GAAATGACCT	1620
	TTAATGACAC TACATTTTCA GGAAGTGAAT TCATTAAAT TTTATTGAA TAATTAAAAA	1680
45	AAAAAAAAA AANCT	1695

50 (2) INFORMATION FOR SEQ ID NO: 293:

(i) SEQUENCE CHARACTERISTICS:

- 55 (A) LENGTH: 1501 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 293:

60 CACTTTCAGC AGTCCTTTCG TCTCTTTGCT TCTACCTCAA ATAGCCCCAG GAGTGGGCTT 60

TAGTCTCCAA TATGGAGCAT CTCAAGCTTC TCCTGGGGGA TGGGGATTGG GATGGGCAGA 120
 ATCTGTTTTG GWTCTCCGGG TTATTTCCAG TGGGTGTAAA AGCAGAGCTG GGCCTTTCCC 180
 TCTCTTATCC CTGAGGGTGG GTAAGAAGGA CTGTATCTAC ACCTGTTCTT CCCTACCTTC 240
 TCTTTTGTTA GGGAGGCCTC ATTCTAAGTT CCTCAAGAGA GTCCTTGGCT TAAAGCTGTA 300
 GCAAGGGTGT GCTAGGTGGG GGATTTGGAG CAAAACCGTC GAGTAGGCAT GATACTGGTA 360
 TGGAGTGGGC CTGCAAAATC AGACAGAAAT GGCTTGAGAA GCCGCAGGGG AGCATGCCTG 420
 TCTCTCAGTG ATAGAGTATG GGAGGGACCT CCCTAGCTTG GAAAATGAGA ATTGAAGGGG 480
 TTATGAACAA ATAGGATGCC TAGTTGAGGA TGTTCCTCAA GTTTTGTCCA ATCTTATCAT 540
 TAGTAGATTT TATAAGCCAC AGAGACAAAC CAGAAACGGA ATAATGTTAC TTTGGATGCT 600
 TTATTTTTTT GTTCTAGGTG TGGCTTTGTA CATGCAGAAG AATGCTATAT GCTGCACATT 660
 TTGCCTTTAA AGTCTTACGA CTTTCCCCAT TTTAGTCTAA TGGGAAGATA CAGATGTGCA 720
 AGTCTGCTTT TTTGTTTTTT GTTATTATTT TTTTTTTTTT GCTCTGTGTT ATGGACATTT 780
 TCAGACATGC ACAGAAGTGG AGAGGATGGT CCTTGGACCC MATGTGTCCA TCACCTAGCT 840
 GCATCACTTA TCAGCTATGG TCAACCTGGT TTCATCTGTA TCTCTCTCTT TTCACCTGTA 900
 TTGTTTATTG AAAATCCAAG AACTATGCC AATGCAACCG TGACTIONTT GGGAGATTGG 960
 TAGTCTCTTT TGATGGTGAT AGTGATGGGG TGCATATCA TAATCACATC AGGTCTGCTT 1020
 TTTGCTTTTA ATGTTAACTA ATGAAGTTCC AGAGATGGGC CTTAGAAATG TGTPTTAAGA 1080
 ATTAACAAGG AGTCTCAAAA AGAAATGAGA GGGATGCTTC CTTTNCCTT GCATCTACAA 1140
 AACMAGAGAG AGACTGTTCT GTTGTAACAC TCTTTCAAAA ATTCTGATAT GGTAAAGTAC 1200
 TTGAGACCC TCAACAGAAT GTCAATCTTT TTTTCTGTGT AACATGGAAA CTTGTGTGAC 1260
 CATTAGCATT GTTATCAGCT TGTACTGGTC TCATAACTCT GGTPTTGGAA GAATAATTTG 1320
 GAAATGTTG CTGTGTTCTG TGAAAATAAC CTCCTCAAAA TAATTAGTAA CTGGTTGTTT 1380
 TACTTGGTAA TTTGACACCC TGTAAATAAC GCAATTATTT CTGTGTTCTT AAACAGTATA 1440
 AATAGTTGTA AGTTTGCATG CATGATGGAA AAATAAAAC CTGTATCTCT GTTAAAAAAA 1500
 A 1501

55 (2) INFORMATION FOR SEQ ID NO: 294:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2683 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

60

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 294:

5	TGANTGTGGT CCCGGGTGCN GATTGGCAGN GCCTCCGCCG CGGCTCGTGG TTGTCCCGCC	60
	ATGGCACTGT CGCGGGGGCT GCGCCGGGAG CTGGCTGAGG CGGTGGCCCG GGGCCGGGTR	120
	CTGGTGGTGG GGGCGGGCGG CATCGGCTGC GAGCTCCTCA AGAATCTCGT GCTCACCGGT	180
10	TTCTCCACA TCGACCTGAT TGATCTGGAT ACTATTGATG TAAGCAACCT CAACAGACAG	240
	TTTTTGTTC AAAAGAAACA TGTTGGAAGA TCAAAGGCAC AGGTGCCAA GGAAAGTGTA	300
15	CTGCAGTTT ACCCGAAAGC TAATATCGTT GCCTACCATG ACAGCATCAT GAACCTGAC	360
	TATAATGTGG AATTTTTCCG ACAGTTTATA CTGGTTATGA ATGCTTTAGA TAACAGAGCT	420
	GCCCGAAACC ATGTTAATAG AATGTGCC TGACGTGATG TTCTCTTTAT TGAAAGTGGA	480
20	ACAGCTGGGT ATCTTGACA AGTAACTACT ATCAAAAAGG GTGTGACCGA GTGTTATGAG	540
	TGTCATCTA AGCCGACCCA GAGAACCCTT CTGGCTGTA CAATTCTGTA CACACCTTCA	600
25	GAACCTATAC ATTGCATCGT TTGGGCAAAG TACTTGTTC ACCAGTTGTT TGGGAAGAA	660
	GATGCTGATC AAGAAGTATC TCCTGACAGA GCTGACCTG AAGCTGCCG GGAACCAACG	720
	GAAGCCGAAG CCAGAGCTAG AGCATCTAAT GAAGATGGTG ACATTAAACG TATTTCTACT	780
30	AAGGAATGGG CTAAATCAAC TGGATATGAT CCAGTTNAAA CTTTTTACCA AGCTTTTTTAA	840
	AGATGACATC AGGTATCTGT TGACAAATGGA CAACTATGG CGGAAAAGGA AACCTCCAAT	900
35	TCCGTGGAC TGGGCTGAAG TACAAAGTCA AGGAGAAGAA ACGAATGCAT CAGATCAACA	960
	GAATGAACCC CAGTTAGGCC TGAAAGACCA GCAGGTTCTA GATGTAAGA GCTATGCACG	1020
	TCTTTTTCA AAGAGCATCG AGACTTTGAG AGTTCAATTA GCAGAAAAGG GGGATGGAGC	1080
40	TGAGCTCATA TGGGATAAGG ATGACCCATC TGCAATGGAT TTTGTCACCT CTGCTGCAA	1140
	CCTCAGGATG CATATTTTCA GTATGAATAT GAAGAGTAGA TTTGATATCA AATCAATGGC	1200
45	AGGGAACATT ATTCCTGCTA TTGCTACTAC TAATGCAGTA ATTGCTGGGT TGATAGTATT	1260
	GGAAGGATTG AAGATTTTAT CAGGAAAAAT AGACCAGTGC AGAACAATTT TTTTGAATAA	1320
	ACAACCAAAC CCAAGAAAGA AGCTTCTTGT GCCTTGTGCA CTGGATCCTC CCAACCCCAA	1380
50	TTGTTATGTA TGTGCCAGCA AGCCAGAGGT GACTGTGCGG CTGAATGTCC ATAAAGTGAC	1440
	TGTTCTCACC TTACAAGACA AGATAGTGAA AGAAAAATTT GCTATGGTAG CACCAGATGT	1500
55	CCAAATTGAA GATGGGAAAG GAACAATCCT AATATCTTCC GAAGAGGGAG AGACGGAAGC	1560
	TAATAATCAC AAGAAGTTGT CAGAATTTGG AATTAGAAAT GGCAGCCGGC TTCAAGCAGA	1620
60	TGACTTCCTC CAGGACTATA CTTTATTGAT CAACATCCTT CATAGTGAAG ACCTAGGAAA	1680

GGACGTTGAA TTTGAAGTTG TTGGTGATGC CCCGGAAAAA GTGGGGSCCA AACAAAGCTGA 1740
 AGATGCTGCC AAAAGCATAA CCAATGGGCA GTGATGATGG AGCTCAGCCC TCCACCTCCA 1800
 5 CAGCTCAAGA GCAAGATGAC GTTCTCATAG TTGATTCGGA TGAAGAAGAT TCTTCAAATA 1860
 ATGCCGACGT CATGAAGAAG AGAGAAGCCG CAAGAGGAAA TTAGATGAGA AAGAGAATCT 1920
 CAGTGCAAAG AGGTCACGTA TAGAACAGAA GGAAGAGCTT GATGATGTCA TAGCATTAGA 1980
 10 TTGAACAGAA ATGCCTCTAA ACAGAACCCT CTTACTATTT AGTTTATCTG GGCAGAACCA 2040
 GATTGTTATG TCCTTTGTTT CAAAGGGAAA AAATGACAG CAGTGACTTG AAAATGATTC 2100
 15 TGCTCCCTTT GAAAGCATTC ATTTTGCTAG AACTGTTAGA CACATTCAG TATGCTGTAT 2160
 TGAAAGTAGG AATATAGTTT TAAAAACCCT TTGAACAAAG TGTGTGCATA ACCAGTCATG 2220
 AGATAAAACA ACACAATGCA TGTTCCTTTT TTAATGTAAA TACCCTTAGG TATCATTAAT 2280
 20 AGTTTCAAAA TATTGTGGTT TAGTAAAGTT GATACCTGGT TATAAATATT ATGCCTTTAT 2340
 TTTTGGCTAG AAGAAGAAIT ATTTTtagcc TAGATCTAAC CATTTTCATA CTCTTAACTG 2400
 25 ATTGAAACAG ATTCAAAGAA GTATCGAGTG CTATGCATTG AAACCTGTTT TTAAATGTTA 2460
 GATGGCACTA TGTATATTAA TGTAACAAAC TGTTAATTTA CTCAAGTTTT CAGTTTGTAC 2520
 CGCCTGGTAT GTCTGTGTAA GAAGCCAATT TTTGTGTATT GTTACAGTTT CAGGTTATTT 2580
 30 ATATTGATG TTTTGTAAAA CTCAAATAAC GACTATACTT ATGGACCAA TAAATGGCAY 2640
 TGCATCTCTG TKAaaaaaaN NACAGAAAAA AAAAAAACA AGA 2683
 35

(2) INFORMATION FOR SEQ ID NO: 295:

40 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1454 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 45 (D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 295:

GGACTCGGGG TGGCTCTAAG GGCAGGGAT AGGGCTGGGG AGCGCCGGCC TGTGGCCCTG 60
 50 ACCAGCCCCT TCTCGTGCAG GTTCCACCCC GATGCAGGTG GTCACGTGCT TGACGCGGGA 120
 CAGCTACCTG ACGCACTGCT TCCTCCAGCA CCTCATGGTC GTGCTGTCTT CTCTGGAACG 180
 CACGCCCTCG CCGGAGCCTG TTGACAAGGA CTTCTACTCC GAGTTTGGGA ACAAGACCAC 240
 55 AGGGAAGATG GAGAACTACG AGCTGATCCA CTCTAGTCGC GTCAAGTTTA CCTACCCAG 300
 TGAGGAGGAG ATTGGGGACC TGACGTTTAC TGTGGCCCAA AAGATGGCTG AGCCAGAGAA 360
 60 GGCCCCAGCC CTCAGCATCC TGCTGTACGT GCAGGCCTTC CAGGTGGGCA TGCCACCCCC 420

	TGGGTGCTGC AGGGGCCCC TGCGCCCCAA GACACTCCTG CTCACCAGCT CCGAGATCTT	480
- 5	CCTCCTGGAT GAGGACTGTG TCCACTACCC ACTGCCCGAG TTTGCCAAAG AGCCGCGCA	540
	GAGAGACAGG TACCGGCTGG ACGATGGCCG CCGCGTCCGG GACCTGGACC GAGTGCTCAT	600
	GGGCTACCAG ACCTACCCGC AGCCCTCACC CTCGTYTTCG ATGACGTGCA AGGTCATGAC	660
10	CTCATGGGCA GTGTCACCCT GGACCACTTT GGGGAGGTGC CAGGTGGCCC GGCTAGAGCC	720
	AGCCAGGGCC GTGAAGTCCA GTGGCAGGTG TTTGTCCCA GTGCTGAGAG CAGAGAGAAG	780
	CTCATCTCGC TGTGGCTCG CCAGTGGGAG GCCCTGTGTG GCCTGAGCTG CCTGTCGAGC	840
15	TCACCGGCTA GCCCAGGCCA CAGCCAGCCT GTCGTGTCCA GCCTGACGCC TACTGGGGCA	900
	GGGCAGCAGG CTTTGTGTGT CTCTAAAAAT GTTTTATCCT CCCTTTGGTA CCTTAATTTG	960
20	ACTGTCCTCG CAGAAATGTG AACATGTGTG TGTGTGTGT TAATTCCTTC TCATGTTGGG	1020
	AGTGAGAATG CCGGGCCCCT CAGGGCTGTT CGGTGTGCTG TCAGCCTCCC ACAGGTGGTA	1080
	CAGCCGTGCA CACCACTGTC GTGTCTGCTG TTGTGGGACC GTTGTAAACA CGTGACACTG	1140
25	TGGGTCTGAC TTTYTCTTCT ACACGTCTTT TCCTGAAGTG TCGAGTCCAG TCCTTTGTGTG	1200
	CTGTTGCTGT TGCTGTGCT GTTGCTGTTG GCATCTTGCT GCTAATCCTG AGGCTGGTAG	1260
30	CAGAAATGCAC ATTGGAAGCT CCCACCCCAT ATTGTCCTTC AAAGTGAGG TCTCCCTGA	1320
	TCCAGACAAG TGGGAGAGCC CGTGGGGGCA GGGGACCTGG AGCTGCCAGC ACCAAGCGTG	1380
	ATTCTGTCTG CCTGTATTCT CTATTCCAAT AAAGCAGAGT TTGACACCGW MAAAAAAAAA	1440
35	AAAAAAAAA AACN	1454

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(2) INFORMATION FOR SEQ ID NO: 296:

(i) SEQUENCE CHARACTERISTICS:

45

- (A) LENGTH: 828 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 296:

50

ACCCCTGGCAT GCCCCACAAA CAGATCACCA GCCAGCTTAC ACAGGCATTA ACTCTCCTCA	60
ATGAGGAAGA ATCATTCACA ACTGAGCAAG ACATTCATAT GATCATTTAA GGAAGTGTTC	120
CCCTTATGTG TTAGCAAGTA TAATCGGCTA ACTCCTAAAT CCCAATGAAT AGTCCTAGGC	180
TGGACAGCAA TGGGCTGCAA TTAGGCAGAT AAAGACATCA GTCCAGTAA ATGAATCCAT	240
AGACTCATCT AGCACCAACT ACCATTAGCA CTATGTTAGG AGCTGCAAGG CCCCAAAGTA	300

60

GAAGATGTGC ATAATGTCTG CTCTTGTGTA GCTCAGGAGA CAATTCCAGC ACAGACACTA 360
 CAGTTAACGC TGAAGTGCAG CTGCAAGTAA TAGCAWGAAC AGTCAGAAAA ATACCTTATG 420
 - 5 AGGGGGCAGG GCTGAAGCTG GGCCTTGAAG GATGGATGAA ATTTGGATAG AGAATGAGGA 480
 AGACAGAGGG NCTCCAAGTG AGAGAAGCAT GAAAAATGAG CARGGGCCTG GATCAGTGGG 540
 GTGTATTTCAG AGCACCTYTC CAGATGCACC ATGCATGCTC ACAGTCCCTT GCCTATGTGT 600
 10 GGCAGAGTGT CCCAGCCAGA TGTGTGCCCC CACCCCATGT CCATTTACAT GTCCTTCAAT 660
 GCCCACCTCA AAAGGYACYT CTTCGTGAAA GCTTTCCTK GGTATCAGGA ATCAAAATTA 720
 15 ATCAGGGATC TTTTCACACT GCTGTTTTTTT CCTCTTTGGT CCTTCTATCA CTAAAATCA 780
 TCTCATTTCAG CCTTACAGCA TAACTAATTA TTTGTTTTTC TCACTACA 828

20

(2) INFORMATION FOR SEQ ID NO: 297:

(i) SEQUENCE CHARACTERISTICS:
 25 (A) LENGTH: 2416 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 297:

TCAATTTCCA TTAAGTCAGA TCAGCCATG TGATTCACCA TTGTTCAGGC TCTCAGGTTT 60
 AACAAAACCT ACTATCACCA TCATCCTTCA ACAGCCACAG TCTGAATTGA GCCAACATTT 120
 35 TTTTTCCTTT GAGAAAGAAG TGGACTGGGG CACAACCTTT AGTCTGAGGG GAGCTAGTGG 180
 AAATCTAGAC AATAGAAGTC ATCGATAGCA GCTTTTCCTC AAATGTGTGA CTCTCAGGG 240
 40 GCTAAACTGC TCTTAGCTTA GAATTATGCT TTAGTAGAGA TCTAGCAGAT AAGTGGGTTA 300
 ATCACTACCA TCCTGTAAGT AGTTATATAG CTTCAGACA TGAGGGAGAC ATCAAACAGG 360
 GATGGAAGCA ACCCCAAGGA TATGCAAGAA GGCATGATG AACCCCTTC CCTCTGGCAG 420
 45 GAGAACAAGG CCAACCAAGG GACAGACTGG AAAGCACTTA GATGTTTAAG GAGGAGAAAG 480
 GGGAAAGCTTT GACCAGTCCT TGCCTTTTGC CAAGTTCAGC CAGTTCCTCG CTGCTTGCAA 540
 50 CCTCTAGCGC AGTAACATTT GCAGAATTGC AGATTTTCCC CCAGATACTA GGAGGAAAGG 600
 GACTTTGGGG GGTGGGAAG GGTGCTGGT GTTTTAAAG CATAAGTTAC CTGTTTGAC 660
 TGTTTAAGA TAGGAAAAA AAATAGTGGG CAAGGTGAAC ATCAGACGTA AATTTGTGTG 720
 55 TTTTATTTTT GTCATGCTCT TGAAATGTT TGACCATTTG TAGTATACAC AGTGAAACTT 780
 GATTCTCTGT TGCATAAAC ACTATATTTT TTTGGAAATG TTAGTGCCA AAAGCCTCTT 840
 60 CCCTCCCTTT CCTTTCTTA TGTACTTCCT TCATACTGC TTTACTGATC AGCCAGGCAA 900

	TAGCCATCCA AGAGCTAGAG CATGAAACAG GGCCCTTTCC AAGTAGGCTC TGGGTGTCCT	960
	AAGCCAGCGT GTGCCCTCTG GTTTAGTGAG TGTAAATAGAG TCCCTGGCAC CTTCCTTTGC	1020
5	AAATGAGGCT AACAGACCAG ACTGCAGCAA GTTATCAGAT TCCTCAATCA GATGCACTAG	1080
	GAGTGAGGAG CCCAGGGATG GAGGGGGTTC CTGAAGTATT GCAGTTGGCT GTAGTAGCTG	1140
10	AGTTCTTTTC CATGTTACCG AAACGTAGC CAGTTACAGT TTAATCAGGA AAACGGTAGA	1200
	TCAATTCAGC CATGGTAGTG CTGGTTGGCA GGGATTGGTA ACGGAGAGAA CTGCTCATCA	1260
	GCCAAAATC AAGCCTTGCC TTTTAGGAGG CCACCAGCAG AGGGACTTGG TCCTCCTTGT	1320
15	CTGGTACTTG TGTACATGCC GGTGACCTGA GGAATCCACT CAACTGGCG AGCAAAAAGG	1380
	GAGCAGTGAT TCTCTTTTCT CTCCCCACCC CCTGCCCTTT GTTACCAACA CCAGTTTCCC	1440
20	AGGGGTACA TGAGTTCTG AATTTTAAA AAATGTTTTT GGTMTGGTTT TTCTGGGGAC	1500
	TGATAAGTGC TTTAAGCAAT GTCCATACCC CGTCAAGACT CCCAGCTTAG TCATTTTCTT	1560
	GTATTTTCT GTTCACAGTA TTTGTGTGTG TGCTTGTTTT GGCAGCTCAT TTTGGCTGTA	1620
25	TTATATATTG AGTGATGAAT TGATCCTCTT TTTTCCCTAA GGGATATGAA TTGTTTTTCT	1680
	TGTGTATAT TCTGCTTGTG AATAGCTGGA GCAACCTGG GGCTGACACG CGTAAGSTAG	1740
30	GGCTGCAAAR CGAGAAGAGA GCCGGTGGAG TGTACTTGTG CCTGACAGGC TGACCTACCT	1800
	GAGTCTCTGA GCTTTTCAGT CCAAATCTTT GCAAGGCTCA AAATGCCACA GAACCTCTCC	1860
	TCTTCTCCCC ACTCCCCATG GCAGGGACCG GACCATCCCT ACATGCAACA TGCTGTTCTT	1920
35	CCAGCCCCTC CCATTGCCAT GGCAAAACAG GTACCTTTGG GGCATGGGG CATTACATGG	1980
	GATGCTTGTG TAATCGACCA CCTAGCCTTC TCTCTCCCT CCCGTCCTCC CCCAGAATCA	2040
40	CTTCTAGGA CACCCGAGCT GCTTGCCCAG GGTCTGTTT CCTGCTAAC TCCAGAGAAG	2100
	CATCCAGGG CTTTGTGACA GTCTCTAATT CCCTTCCCT CTCGTTAAGA ATCATATTGT	2160
	ATAGTAGCTT TCAGACCATA CAGTATTCAT TGGGTACTC CTATTATTAT CAAGTAGCTG	2220
45	GAATGTGAA GGTCCGAGTA GTTAGATCTT TAGCTTTTAT TCCTTATTTT TTTGTATTAC	2280
	TCTCCATGTG TATAAATTAT TGATCATGTT GCTGGCTTTT ATAACTCTA AGCGAAGGAG	2340
50	GAGCACTGCC TCAGCCTTTG CACATGGTAA TGAAGCACTG TTTTAAATA AAAGRGRGAA	2400
	MCMCCAAAA AAAAAA	2416

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(2) INFORMATION FOR SEQ ID NO: 298:

(i) SEQUENCE CHARACTERISTICS:

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(A) LENGTH: 545 base pairs

(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 298:

	GAATTCGGCA CGAGCCATGC YTGGCCTCTC CTTGATTCTT ACAGTCACCTT TGTTCGGCTGT	60
10	TTCTGACTCA GCAGCTACCT GCATTGTGGC CAAAGGATGA CCTATTCCCTT CTCAGGAGGG	120
	CAAAAATGTG GAATAGTGTG TGTCCATGCC TCTCCTCATG GGCTACCACC TCTGCCACCG	180
	TGGTTAATCA GTAACAACCA GGAGAGAAGC TGCTGGAAC T GACCTCTGGG AACTCCCTGG	240
15	ATGGTTTGGT GCAGGAATGT AGTAGGCATA CACGTGGTTG CGTGGATCTG GGCCCTCCTG	300
	ATGTGAGTAG AGAGGTAAAA GGSCACCATC TCCTTGACCT YTGGGGAAC T CATCCACAAA	360
20	GAAGATGTTT CCAAGATGCT TCTGAAGATT GSCTAAAAAT AGCCGGTTTC CACCCCCGTG	420
	AATGCATCCA TTCTAGAATG CTCCTTCACC AGGACCAGAG AACTGATTTA CAGAAGTGAC	480
	ATGAAAACAT TCCATCCCAG AATTTCANF ACCTCAAATT NAATTTCTAC CTATTAAAAA	540
25	NAAAA	545

30 (2) INFORMATION FOR SEQ ID NO: 299:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 1530 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 299:

40	GGCTCTGCTG GGCATCATA C TTGTCAC TGG GTAAACAGTT TGCCCACTTA CCGCAGATGA	60
	AGCTGCTTGC CAGGGCTCTC CGGCTCTGTG AGTPTGGGAG GCAGGCATCT TCCAGGAGGC	120
45	TGGTGGCTGG CCAGGGATGT GTGGGGCCCC GGCAGGGGTG CTGCGCTCCC GTCCAGGTGG	180
	TTGGGCCAG GGCTGATCTC CCACCTGTG GAGCCTGCAT TACTGGAAGG ATCATGCGGC	240
	CAGATGATGC CAACGTGGCC GGCAATGTCC ACGGGGGGAC CATCCTGAAG ATGATCGAGG	300
50	AGGCAGGCGC CATCATCAGC ACCCGGCATT GCAACAGCCA GAACGGGGAG CGCTGTGTGG	360
	CCGCCCTGGC TCGTGTGAG CGCACC GACT TCCTGTCTCC CATGTGCATC GGTGAGGTGG	420
55	CGCATGT CAG CGCGGAGATC ACCTACACCT CCAAGCACTC TGTGGAGGTG CAGGTCAACG	480
	TGATGTCCGA AAACATCCTC ACAGGTGCCA AAAAGCTGAC CAATAAGGCC ACCCTGTGGT	540
	ATGTGCCCC T GTCGCTGAAG AATGTGGACA AGGTCTCGA GGTGCCTCCT GTTGTGTATT	600
60	CCCGGCANGA GCAGGAGGAG GAGGGCCGGA AGCGGTATGA AGCCAGAAAG CTGGAGCGCA	660

TGGAGACCAA GTGGAGGAAC GGGGACATCG TCCAGCCAGT CCTCAACCCA GAGCCGAACA 720
 CTGTCAGCTA CAGCCAGTCC AGCTTGATCC ACCTGGTGGG GCCTTCAGAC TGCACCCTGC 780
 5 ACGGCTTTGT GCACGGAGGT GTGACCATGA AGCTCATGGA TGAGGTCGCC GGGATCGTGG 840
 CTGCACGCCA CTGCAAGACC AACATCGTCA CAGCTTCCGT GGACGCCATT AATTTTCATG 900
 10 ACAAGATCAG AAAAGGCTGC GTCATCACCA TCTCGGGACG CATGACCTTC ACGAGCAATA 960
 AGTCCATGGA GATCGAGGTG TTGGTGGACG CCGACCCTGT TGTGGACAGC TCTCAGAAGC 1020
 GCTACCGGGC CGCCAGTGCC TTCTTCACCT ACGTGTGCTG GAGCCAGGAA GGCAGGTCCG 1080
 15 TGCCTGTGCC CCAGCTGGTG CCCGAGACCG AGGACGAGAA GAAGCGCTTT GAGGAAGGCA 1140
 AAGGGCGGTA CCTGCAGATG AAGGCGAAGC GACAGGGCCA CGCGGAGCCT CAGCCCTAGA 1200
 20 CTCCCTCCTC CTGCCACTGG TGCTTCGAGT AGCCATGGCA ACGGGCCCAG TGTCCAGTCA 1260
 CTTAGAAGTT CCCCCCTTGG CCAAAAACCC AATTCACATT GAGAGCTGGT GTTGTCTGAA 1320
 GTTTTCGTAT CACAGTGTTA ACCTGTACTC TCTCCTGCAA ACCTACACAC CAAAGCTTTA 1380
 25 TTTATATCAT TCCAGTATCA ATGCTACACA GTGTTGTCCC GAGCGCCGGG AGGCGTTGGG 1440
 CAGAAACCCCT CGGGAATGCT TCCGAGCAG CTGTAGGGTA TGGAAGAAC CCAGCACCAC 1500
 30 TMATAAAGCT GNTGCTTGGC TGGGAAGNA 1530

35 (2) INFORMATION FOR SEQ ID NO: 300:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 997 base pairs
 (B) TYPE: nucleic acid
 40 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 300:

45 AGGTACTGAG AGACACATTA CACCTAACCA ACAAGAAGAA GGATCCTCCC CCTTATAATT 60
 TAACTATGTT TACAGGGAAT GCGTACATTG TGGCTTCCCG AGNATTTTCGT CCAACATGTT 120
 TTGAAGAACC CTAAATCCCA ACAACTGATT GAATGGGTAA AAGACACTTA TAGCCAGAT 180
 50 GAACACCTCT GGGCCACCCT TCAGCGTGCA CGGTGGATGC CTGGCTCTGT TCCCAACCAC 240
 CCCAAGTACG ACATCTTCAG ACATGACTTC TATTGCCAGG CTGGTCAAGT GGCAGGGTCA 300
 55 TGAGGGAGAC ATCGATAAGG GTGCTCCTTA TGCTCCCTGC TCTGGAATCC ACCAGCGGGC 360
 TATCTGCGTT TATGGGGCTG GGGACTTGAA TTGGATGCTT CAAAACCATC ACCTGTTGGC 420
 CAACAAGTTT GACCCAAAGG TAGATGATAA TGCTCTTCAG TGCTTAGAAG AATACCTACG 480
 60

TTATAAGGCC ATCTATGGGA CTGAACCTTG AGACACACTA TGAGAGCGTT GCTACCTGTG 540
 GGGCAAGAGC ATGTACAAAC ATGCTCAGAA CTTGCTGGGA CAGTGTGGGT GGGAGACCAG 600
 - 5 GGCTTTGCAA TTCGTGGCAT CCTTTAGGAT AAGAGGGCTG MTATTAGATT GTGGGTAAGT 660
 AGATCTTTTG CCTTGCAAAT TGCTGCCTGG GTGRATGCTG CTTGTCTCTT CACCCCTAAC 720
 10 CCTAGTAGTT CCTCCACTAA CTTTCTCACT AAGTGAGAAT GAGAACTGCT GTGATAGGGA 780
 GAGTGAAGGA GGGATATGTG GTAGAGCACT TGAATTCACT TGAATGCCTG CTGGTAGCTT 840
 TTCCATTCTG TGGAGCTGCC GTTCCTAATA ATTCCAGGTT TGGTAGCGTG GAGGAGAACT 900
 15 TTGATGGAAA GAGAACCTTC CCTTCTGTAC TGTAACTTA AAAATAAATA GCTCCTGATT 960
 CAAAGTAAGG AAAAAA AAAAGAAAAA AACTCGA 997

20

(2) INFORMATION FOR SEQ ID NO: 301:

25 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 2345 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 301:

TTGAGGCCGA CGCTAGGGGC CCGGAAGRAA ACTGCGAGGC GAAGGTGACC GGGGACCGAG 60
 CATTTTCAGAT CTGCTCGGTA GACCTGGTGC ACCACCACCA TGTTCGGCTGC AAGGCTGGTG 120
 35 TGTCTCCGGA CACTACCTTC TAGGGTTTTT CACCCAGCTT TCACCAAGGC CTCCCCTGTT 180
 GTGAAGAATT CCATCAGCAA GAATCAATGG CTGTTAACAC CTAGCAGGGA ATATGCCACC 240
 40 AAAACAAGAA TTGGGATCCG GCGTGGGAGA ACTGGCCAAG AACTCAAAGA GGCAGCATTG 300
 GAACCATCGA TGGAAAAAAT ATTTAAAAAT GATCAGATGG GAAGATGGTT TGTTCCTGGA 360
 45 GGGGCTGCTG TTGGTCTTGG AGCATGTGTC TACTATGGCT TGGGACTGTC TAATGAGATT 420
 GGAGCTATTG AAAAGGCTGT AATTGGCCTT CAGTATGTCA AGGATAGAAT TCATTCCACC 480
 TATATGTACT TAGCAGGGAG TATTGGTTTA ACAGCTTTGT CTGCCATAGC AATCAGCAGA 540
 50 ACGCCTGTTT TCATGAACTT CATGATGAGA GGCTCTTGGG TGACAATGG TGTGACCTTT 600
 GCAGCCATGG TTGGAGCTGG AATGCTGGTA CGATCAATAC CATATGACCA GAGCCCAGGC 660
 CCAAAGCATC TTGCTTGGTT GCTACATTCT GGTGTGATGG GTGCAGTGGT GGCTCCTCTG 720
 55 ACAATATTAG GGGGTCCTCT TCTCATCAGA GCTGCATGGT ACACAGCTGG CATTTGTTGG 780
 GGCTCTCCA CTGTGGCCAT GTGTGCGCCC AGTGAAGAGT TTCTGAACAT GGGTGCACCC 840
 60 CTGGGAGTGG GCCTGGGTCT CGTCTTTGTG TCCTCATTTG GATCTATGTT TCTTCCACCT 900

ACCACCGTGG CTGGTGCCAC TCTTTACTCA GTGGCAATGT ACGGTGGATT AGTTCTTTTC 960
 AGCATGTTCC TTCTGTATGA TACCCAGAAA GTAATCAAGC GTGCAGAAGT ATCACC AATG 1020
 5 TATGGAGTTC AAAAATATGA TCCCATTAAC TCGATGCTGA GTATCTACAT GGATACATTA 1080
 AATATATTTA TGCGAGTTGC AACTATGCTG GCAACTGGAG GCAACAGAAA GAAATGAAGT 1140
 10 GACTCAGCTT CTGGCTTCTC TGCTACATCA AATATCTTGT TTAATGGGGC AGATATGCAT 1200
 TAAATAGTTT GTACAAGCAG CTTTCGTTGA AGTTTAGAAG ATAAGAAACA TGTCATCATA 1260
 TTTAAATGTT CCGGTAATGT GATGCCTCAG GTCTGCCCTT TTTTCTGGAG AATAAATGCA 1320
 15 GTAATCCTCT CCCAAATAAG CACACACATT TTCAATTCTC ATGTTTGAGT GATTTTAAAA 1380
 TGTMTTGGTG AATGTGAAAA CTAAAGTTTG TGTCATGAGA ATGTAAGTCT TTTTCTACT 1440
 20 TTAAATTTA GTAGGTTTAC TGAGTAACTA AAATTTAGCA AACCTGTGTT TGCATATTTT 1500
 TTTGGAGTGC AGAATATTGT AATTAATGTC ATAAGTGATT TGGAGCTTTG GTAAAGGGAC 1560
 CAGAGAGAAG GAGTCACCTG CAGTCTTTTG TTTMTTAAA TACTTAGAAC TTAGCACTTG 1620
 25 TGTATTGAT TAGTGAGGAG CCAGTAAGAA ACATCTGGGT ATTTGGAAC AAGTGGTCAT 1680
 TGTTACATTC ATCTGCTGAA CTTAACAAAA CTGTTTATCC TGAAACAGGC ACAGGTGATG 1740
 30 CATTCCTCTG CTGTTGCTTC TCAGTGCTCT CTTTCCAATA TAGATGTGGT CATGTTTGAC 1800
 TTGTACAGAA TGTTAATCAT ACAGAGAATC CTTGATGGAA TTATATATGT GTGTTTACT 1860
 TTTGAATGTT ACAAAGGAA ATAACTTTAA AACTATTCTC AAGAGAAAAT ATTCAAAGCA 1920
 35 TGAAATATGT TGCTTTTCC AGAATACAAA CAGTATACTC ATGATTGCTA AGTGTTTTTT 1980
 TATTTTTCGA TATTTATTGA ACTGTCTAAT TGAATACAGC TTGCTCTTGT CACCTCTTCA 2040
 40 AGCTTTCAAG CCTTTATAGA AAAGCTTCTT TGTGGCTTAC ACTGGAAATT ATGAAAGCAG 2100
 TTTTCTCCT AAGACTTTTG GTTCTCGCA TTGCCTCTCA GACTAAGCAC TAAAAAGCAA 2160
 AGCAAAACAG AACTAGTNCT GTCTTAATGA AATATATCAA CCCAAAAGTG TAATGAGGAA 2220
 45 AATGCTTCAT TAGTTTCCCC TAGCAGACTT TTAATTCTCT TAACTGCTA CACCATTAAT 2280
 TTCTTGAGAC ATTTGTAAGT CCTTTGATAC AGAAGAGTTA TATTTAGGAG GNCCTTAATG 2340
 50 AAGGG 2345

55 (2) INFORMATION FOR SEQ ID NO: 302:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2369 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

60

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 302:

5	TTTTTTTTTT TTTTTTTTTT TTTTNC AAG ATCATTGTTT ATTTATTACT TCAGATAAAA	60
	AGATAGTATA CATATTAGGG AATCCCTTAA AATTCAACTC TAGAGTTATA CACCATCTAG	120
	TACTTTTGCA ATGAATGTTA ACAACAACAA AAAAAATCTC TAAACACCTG AAAGCCCCAC	180
10	TATTAACATG GACTATGGTA ATAAAAAATT TTGACATTTA ATTTGTTCAA CATATAGTAT	240
	TTACATTATG AAACCAATGG TGATGATACA ATAAAGTGAT AAAGAAATAG TAAAAATAAA	300
15	CTTTAAAAAG CAAAGGTTTA TAGTCTGACA ATGCTAATTA TCCTAATTGT ATATAAAAAA	360
	TTAAACATA GAGCTTCTG TTACAAAATT CTTAATCCTC TGGGTTGTAA TCATTACTTG	420
	CTACCAATTT ACATGCAACA TCTGCTAGGA CTGACATTTG ATTTTTTTTCC CCAAGAATGT	480
20	GTGAGTAGAT AAATGACATT TCAGAGCAGA TATTAATTTA CTTGTGGACA GAAAAAGAAA	540
	CTCAAGATTG GTACTGGTCA CAAGCCTCTT CCCAATAGAA ATTATAAAAA CAGTAAGATA	600
25	AAATTTAAAA AAAATCTAAA AAGGGGATGC ATAGGCAAAG AGTACCATAA ATGGCACAGC	660
	TCAAAAATC CCAGGACCAA TCAGACACAC ATCTTTTCTC TCTCCTTCAG CGACAAGAGG	720
	TCGATTTTGC CATCAAATAA CCATGATTGA AGCAAGCGAG GGGCACCAGG TGTACAAC TG	780
30	ATTAGATCTT GCAAAATACT AAGATGGGAG CAGGGGTGGC CAGAAGAAGG GGTAATTTAT	840
	ATATAATTCA AACTATATAC AGCATAAATG GAATGCAGCC CATCCCAAAC TGGCTCTGTG	900
35	AAACAATTGG ACCTTTATAG TTAAAAATTAT AACAAGTGTA ATAATACAAT AGATTTACAT	960
	GGGAAGCAAA ATCCAAGGGA CATTTTATAT TAAGTATTTA CTGTGCTGTT TCAATTTAAA	1020
	AATAATTTTG CTAAGTATAC ATCTCAACTG AAGTCTATGT AAAAAATGTC CTAATAGATA	1080
40	CAGATATTTA CCTTTGGTGA GTTGAAGGCC TTTTGTGAC TTCTGTCTGA ACTGTAGGCA	1140
	GAATGCTAGA TGTACATGCA CATATGGAGA AACTCAAGCT GAGGTCATCC AAAAGCTGTG	1200
45	CGTATGAGGA GGCTGGAGGT ACTTTGAAAG TCAAAGTAGA CCAGAAACCC AAAACAGGTA	1260
	ACAGTGAGGA TGGCAACAGG GAATGGAATG CCAATATGGC AGTAAAAC TT TTTTAAAAA	1320
	CAGAAAGAGG AAGGCCTCTC GTACCAGCAG AATCCTGTAC ACGTACAAAA AAGAAAAAGC	1380
50	CACCCACCAT TTTGTAAAAC AGAAGCCAAT TATAGTGTGG GAAAGTACAA ATTACAGAAA	1440
	ACCAGAAGTC AACAGAAGAA AACTACTGG TTTACTTGAG AGAAAGGAGA ATGGTTCACC	1500
55	CCGAGCAGAG TTAATTGGTG AACGCCGCCA CCACGCCCA CAGAACCTCA TTGGTGTGG	1560
	CCTTCAGACA TTCCACTTCA GGGTCTAAGT CGAGAARN TG CCGCACTCTC TTGGTAGCCA	1620
60	AATCATACTG CTCGTCCAGA AGAGGAGCAA AAGCATCTCT CAGGACGTCC GAGGCATGAG	1680

	CCAGGTAAAT GAGGGCCAGC AAGCGCCTGT CCATGCGGTG AGGGTCATTC ACCCATTTGT	1740
	CAAGAACGGC TTCCTGTACT TTCTTGATGA GGCCTGCTT AATGTTGTTA TTGGTGAGGG	1800
- 5	GATGTGTTGT CATGTCAAAA AGTAGGAAGT TCTGTTTCTC TGTGTCAAT ACACCCTTTT	1860
	CCACCAGGTT TTTAGCTAAT CGTCCCGTA CATTTCTTAA CTGATAATGC AATTTTAATG	1920
10	GATTCCATGT CTCACCACTA AGTAATTCAA TCCAGTTCTG GACCGTTTCT GGAGGCTGAG	1980
	TTTCCTTAAC ATGCTTCAGA GCTTCATCAA GAAGAACATC CCCTGTTGGA GCATCTGACT	2040
	TACAGATTAC CTTTCTTGTT AATAGACTTT TACGTCTCAT TCCACAAGCC TCTAGTTGTA	2100
15	ACCTTCCTCT CAATGCTAAT TCAATTAACA TACAGCCAGC TAATCCAGAT GATATACAGT	2160
	CATTCCAAAA TGATGTGTAA ACCTTCGCGG TCCTTGAGGC CCAGCAGGAG CACTTCCTCC	2220
20	ATCAGGGTCA GCCCGGTTTC CTTGGAGTCG CCTTGTGCTG CGTCGTCTTG CTCGTGCGG	2280
	CGGCTCTGCG CGTCGTCTTC GCTGCTAGCC GCGCCGCCGC CCGCCGCCCG CTCCTGTGCG	2340
	GCGGCGTTGC GGGAGGCCTC GTGCGCCG	2369
25		

(2) INFORMATION FOR SEQ ID NO: 303:

- 30 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 1181 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 303:

	GGGACGTGTG GTTTCAGCTC GTGCGCCTCC CCGTGGGTTT GCGACGTTTA GCGACTATTG	60
40	CGCTGCGCC ACGCCGGCTG CGAGACTGGG GCCGTGGYTG CTGGTCCCGG GTGATGCTAG	120
	GCGGCTCCCT GGGCTCCAGG CTGTTGCGGG GTGTAGGTGG GAGTCACGGA CGGTTCCGGG	180
45	CCCGAGGTGT CCGCGAAGGT GGCGCACATG GCGGCAGGG GAGAGCATGG CTCAGCGGAT	240
	GGTCTGGGTG GACCTGGAGA TGACAGGATT GGACATTGAG AAGGACCAGA TTATTGAGAT	300
	GGCCTGTCTG ATAACTGACT CTGATCTCAA CATTTTGGCT GAAGGTCCTA ACCTGATTAT	360
50	AAAACAACCA GATGAGTTGC TGGACAGCAT GTCAGATTGG TGTAAAGGAC ATCACGGGAA	420
	GTCTGGCCTT ACCAAGGCAG TGAAGGAGAG TACAATTACA TTGCAGCAGG CAGAGTATGA	480
55	ATTTCTGTCC TTTGTACGAC AGCAGACTCC TCCAGGGCTC TGTCCACTTG CAGGAAATTC	540
	AGTTCATGAA GATAAGAAGT TTCTTGACAA ATACATGCCC CAGTTCATGA AACATCTTCA	600
	TTATAGAATA ATTGATGTGA GCACTGTTAA AGAACTGTGC AGACGCTGGT ATCCAGAAGA	660
60	ATATGAATTT GCACCAAAGA AGGCTGCTTC TCATAGGGCA CTTGATGACA TTAGTGAAAG	720

CATCAAAGAG CTTCAAGTTTT ACCGAAATAA CATCTTCAAG AAAAAAATAG ATGAAAAGAA 780
 5 GAGGAAAATT ATAGAAAATG GGGAAAATGA GAAGACCGTG AGTTGATGCC AGTTATCATG 840
 CTGCCACTAC ATCGTTATCT GGAGGCAACT TCTGGTGGTT TTTTTTCTC ACCGTGATGG 900
 CTGGCAGAG CMCTTCGGTT AACTTGCATC TCCAGATTGA TTAACAAGC AGACAGCACA 960
 10 CGAAATACTA TTTTCTCCT AATATGCTGT TTCCATTATG ACACAGCAGC TCCTTTGTAA 1020
 GTACCAGGTC ATGTCCATCC CTTGGTACAT ATATGCATTT GCTTTTAAAC CATTTCTTTT 1080
 GTTTAAATAA ATAAATAAGT AAATAAGCT AGTTCTATTG AAATGCAAAA AAAAAAAAAA 1140
 15 AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA N 1181

20

(2) INFORMATION FOR SEQ ID NO: 304:

(i) SEQUENCE CHARACTERISTICS:

25

(A) LENGTH: 1537 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 304:

30

CTTTTGTGTT TCCGGCCGAT CCCACCTCTC CTCGACCCTG GACGTCTACC TTCCGGAGGC 60

CCACATCTTG CCCACTCCGC GCGCGGGGCT AGCGCGGGTT TCAGCGACGG GAGCCCTCAA 120

35

GGGACATGGC AACTACAGCG GCGCGGGCGG GCGCGGCCCG AANATGGAGC TGGCCCGGAA 180

TGGGGAGGGT TCGAAGAAAA CATCCAGGCG GGAGGCTCAG CTGTGATTGA CATGGAGAAC 240

ATGGATGATA CCTCAGGCTC TAGCTTCGAG GATATGGGTG AGCTGCATCA GCGCCTGCGC 300

40

GAGGAAGAAG TAGACGCTGA TGCAGCTGAT GCAGCTGCTG CTGAAGAGGA GGATGGAGAG 360

TTCTTGGGCA TGAAGGGCTT TAAGGGACAG CTGAGCCGCG AGGTGGCAGA TCAGATGTGG 420

45

CAGGCTGGGA AAAGACAAGC CTCCAGGGCC TTCAGCTTGT ACGCCAACAT CGACATCCTC 480

AGACCCTACT TTGATGTGGA GCCTGCTCAG GTGCGAACAG GGCTCCTGGA GTCCATGATC 540

CCTATCAAGA TGGTCAACTT CCCCAGAAA ATTGCAGGTG AACTCTATGG ACCTCTCATG 600

50

CTGGTCTTCA CTCTGGTTGC TATCCTACTC CATGGGATGA AGACGTCTGA CACTATTATC 660

CGGGAGGGCA CCCTGATGGG CACAGCCATT GGCACCTGCT TCGGCTACTG GCTGGGAGTC 720

55

TCATCCTTCA TTTACTTCCT TGCCTACCTG TGCAACGCCC AGATCACCAT GCTGCAGATG 780

TTGGCACTGC TGGGCTATGG CCTCTTTGGG CATTCGATTT TCCTGTTTCAT CACCTATAAT 840

ATCCACCTCC ACGCCCTCTT CTACCTCTTC TGGCTGTTGG TGGGTGGACT GTCCACACTG 900

60

CGCATGGTAG CAGTGTGGT GTCTCGGACC GTGGGCCCCA CACAGCGGCT GCTCCTCTGT 960
 GGCACCTGG CTGCCCTACA CATGCTCTTC CTGCTCTATC TGCATTTTGC CTACCACAAA 1020
 5 GTGNTAGAGG GGATCCTGGA CACACTGGAG GGCCCCAACA TCCCGCCCAT CCAGAGGGTC 1080
 CCCAGAGACA TCCCTGCCAT GCTCCCTGCT GCTCGGCTTC CCACCACCGT CCTCAACGCC 1140
 10 ACAGCCAAAG CTGTTGCGGT GACCTGCGAG TCACACTGAC CCCACCTGAA ATTCTTGGCC 1200
 AGTCCTCTTT CCCGCAGCTG CAGAGAGGAG GAAGACTATT AAAGGACAGT CCTGATGACA 1260
 TGTTTCGTAG ATGGGGTTTG CAGCTGCCAC TGAGCTGTAG CTGCGTAAGT ACCTCCTTGN 1320
 15 AGCTGTGGC ACTTCTGAAA GCACAAGGCC AAGAACTCCT GGCCAGGACT GCAAGGCTCT 1380
 GCAGCCAATG CAGAAAATGG GTCAGCTCCT TTGAGAACCC CTCCCCACCT ACCCCTTCCT 1440
 20 TCCTCTTTAT CTCTCCACA TTGTCTTGCT AAATATAGAC TTGGTAATTA AAAAAAAAAA 1500
 AAAAAAAAAA AAAAAAAAAA AAAAAAGGG GGNCCCC 1537

25

(2) INFORMATION FOR SEQ ID NO: 305:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1493 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

30

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 305:

35

TGCATGCCAA AACCAATGCC TGCCAAACAA AATCTTAGAC ATCCCAATAT AATATGTTAG 60
 TTATATTTCT ATTACATCA TTATTGAAAA TACCCAGCTC AGTGCCTGGC TTAATAAATG 120
 40 TTAAATCCC TTACCTACTC TTGCTCTATT TTTTATTG AAATGGAGAT GAGCAAAATA 180
 ACACATTCAT GGCTGAAGCA ATTTTGTGGA CATTTCTTGT TACCAAAAGA TCTATAATCA 240
 45 GGATGATCCT GAGCTGTTCA AACAAGCTGT ATATAACAG ACAATGAAAC TCTTTGCAGA 300
 GCTGGAAATT AAAAGGAAAG AGAGAGAAGC CAAAGAGATG CATGAAAGGA AACGACAAAG 360
 GGAAGAAGAG ATTGAAGCTC AAGAAAAAGC CAAACGGGAA AGAGAGTGGC AGAAAACTT 420
 50 TGAGGAAAGT CGAGATGGTC GTGTGGACAG CTGGCGAAAC TTCCAAGCCA ATACGAAGGG 480
 GAAGAAAGAG AAGAAAAATC GGACCTTCCT GAGACCACCG AAAGTAAAAA TGGAGCAACG 540
 TGAGTGACCG CCCAAGGTCA CAGGCACAGA ACCTTTCCCC TGCTATCTCC CTTCCTGCTT 600
 55 CGAAGGACTC ATTCTTTCCT CCCACTTCCA CCCCAACATA GAGTAGTATT TGCTTTTATG 660
 TCCATTTTGT TTTCAATACG ATTTAATATC GATCAGAGTA ATTCTTTTGT ACATTGAAAT 720
 60 GAGGGGCTTG GTTTAAAAA AGACCTTTCC CTCTCCCTGC CCCTAGAACA ACCAGTATTA 780

GAAGGTGCCA CCATTGGTGC TGCCTTCTCT TCCCACAGCC TGTAATCAG TGTTTTGTAC 840
 TTCACTGAAT TGTGATGGTT AGAACTTCG TGGATAGTTT GTGGAAATCA TCCAATTAAA 900
 5 CATACTGCTT AAAACAGTGT TGCTGTGACT TCAGAGACAA GCCTGGAAGG GGCACCTTAG 960
 GAAGCCCCCT CGCTTCAGTT GCTCGCTTCT GGGTGTGCTC CCTTCGAAGG CCCAGATAAG 1020
 10 ACAGGGAACA CTTGTGAGCA CACAGAGCAG CATCTGATGC CCTGTGGTGT TTGGCATGTG 1080
 CCCCCTGTCT ACTGACCAAT CAGTGTGGCA TGAGGCCAC GCCACCCAAA CCTTTCACCT 1140
 TCCAAAGAGC TAGCCGTCTC CCACCCAGTA CCATGTCTTA GCCTGTCTGC ATTTGTTAGT 1200
 15 GGTAATATTC TTTATGTATA ATAAATTTT ATACCCAAGC CATTGATGTA CTTTTCCTTG 1260
 TACTCTCCCT TGTGGGTCCC TTGTCTGGCT TGGCTGAACC CCAAATGCT TTGGGGTTGG 1320
 20 ACAGACCTGG CTGAACCTTA GTTCTTTCAT CTAAGAAATG GGAATATGAA TTACTGCAGC 1380
 AGCTTTTAGG GCAGATTTGC CATGGCATAT ACAAGGTAAC TACCATAGTG CTCCTTGGGT 1440
 ATTGCCAATA TCCTATTATT TCTGTGTAAT ATGAAGATAC TGATTGTTTT GAG 1493
 25

(2) INFORMATION FOR SEQ ID NO: 306:

30

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 577 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

35

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 306:

AATTCCGCAG AGGNATTATA TACACTATAC TGGCATTTAC TGTTCACCC AGCCCGGAAA 60
 40 GTCAGAGATG TATATTGGAA AATTACAAAC TCCATCTACA TTGGTTCCA GGACGCTCTC 120
 ATAGCACATT ACCCAAGAAT CTACAACGAT GATAAGAACA CCTATATTCG TTATGAACCT 180
 45 GACTATATCT TATAATTTTA TTGTTATTT TGTGTTAAT GCACAGCTAC TTCACACCTT 240
 AAACCTGCTT TGATTGGTG ATGTAACTT TTAACATTG CAGATCAGTG TAGAACTGGT 300
 CATAGAGGAA GAGCTAGAAA TCCAGTAGCA TGATTTTAA ATAACCTGTC TTTGTTTTTG 360
 50 ATGTTAAACA GTAAATGCCA GTAGTGACCA AGAACACAGT GATTATATAC ACTATACTGG 420
 AGGGATTTCA TTTTAAATTC ATCTTATGA AGATTAGAA CTCATTCTTT GTGTTTAAAG 480
 55 GGAATGTTTA ATTGAGAAAT AAACATTTGT GWACAAAATG YTAACAAAAA AAAAAAAAAA 540
 AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AACTCGA 577

60

(2) INFORMATION FOR SEQ ID NO: 307:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 2860 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

10 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 307:

	GTGTNGACCG CTCTCNCAAT ATGGCTCCCC CGGGCTGGCA GRWRKTCRGT CWCKRGTGGC	60
	TAGCCTGTCC TGACAGGGGA GAGTTAAGCT CCCGTTCCTCC ACCGTGCCGG CTGGCCAGGT	120
15	GGGCTGAGGG TGACCGAGAG ACCAGAACCT GCTTGCTGGA GCTTAGTGCT CAGAGCTGGG	180
	GAGGGAGGTT CCGCCGCTCC TCTGCTGTCA GCGCCGGCAG CCCCTCCCGG CTTCACCTCC	240
20	TCCCGCAGCC CCTGCTACTG AGAAGCTCCG GGATCCGAGC AGCCGCCACG CCCTGGCCTC	300
	AGCCTGCGGG GCTTCCAGTC AGGCCAACAC CGACGCGCAC TGGGGAGGAA GACAGGACCC	360
	TTGACATCTC CATCTGCACA GAGTCTCTGG CTGGAACCGA GCAGCCTCCT CCTCCTAGGA	420
25	TGACCTCACC CTCCAGCTCT CCAGTTTTC A GGTGGAGAC ATTAGATGGA GGCCAAGAAG	480
	ATGGCTCTGA GCGCGACAGA GGAAAGCTGG ATTTTGGGAG CGGGCTGCCT CCCATGGAGT	540
30	CACAGTTCCA GGGCGAGGAC CGGAAATTCG CCCCTTCAGA TAAGAGTCAA CCTCCAATA	600
	CCGAAAGGGA ACAGGTGCCA GTCAGCCGGA TCCAAACCGA TTTGACCGAG ATCGGCTCTT	660
	CAATGCGGTC TCCCGGGGTG TCCCGAGGA TCTGGCTGGA CTTCAGAGT ACCTGAGCAA	720
35	GACCAGCAAG TACCTACCG ACTTCGGAAA TACACAGAGG GCTCCACAGG TAAGACGGCC	780
	TGATGAAGGC TGTGCTGAAA CCTTAAGGAC GGGGTCAATG CCTGCATTCT GCCACTGCTG	840
40	CAGATCGACC GGGACTCTGG CAATCCTCAG CCCCTGGTAA ATGCCCACTG CACAGATGAC	900
	TATTACCGAG GCCACAGCGC TCTGCACATC GCCATTGAGA AAGAGGAGTC TGCAGTGTGT	960
	GAAGCTCCTG GTGGAGAATG GGGCCAATGT GCATGCCCGG GTCTGCGGCG ACTTCTTCCA	1020
45	GAAGGGCCAA GGGACTTGCT TTTATTTTCG TGAGCTACCC CTCTCTTTGG CCGCTTGCAC	1080
	CAAGCAGTGG GATGTGGTAA GCTACCTCCT GGAGAACCCA CACCAGCCCG CCAGCCTGCA	1140
50	GGCCACTGAC TCCCAGGGCA ACACAGTCCT GCATGCCCTA GTGGATGATC TCGGACAACT	1200
	CAGCTGAGAA CATTGCACTG GTGACCAGCA TGTATGATGG GCTCCTCCAA GCTKGGGSCC	1260
	SCCYTCTGCC CTACCGTGCA GCTTGAGGAC ATCCGCAACC TGCAGGATCT CACGCCTCTG	1320
55	AAGCTGGCCG CCAAGGAGGG CAAGATCGAG ATTTTCAGGC ACATCCTGCA GCGGGAGTTT	1380
	TCAGGACTGA GCCACCTTTC CCGAAAGTTC ACCGAGTGGT GCTATGGGCC TGTCCGGGTG	1440
60	TCGCTGTATG ACCTGGCTTC TGTGGACAGC TGTGAGGAGA ACTCAGTGCT GGAGATCATT	1500

GCCTTTCATT GCAAGAGCCC GCACCGACAC CGAATGGTCG TTTTGGAGCC CCTGAACAAA 1560
 CTGCTGCAGG CGAAATGGGA TCTGCTCATC CCCAAGTTCT TCTTAAACTT CCTGTGTAAT 1620
 5 CTGATCTACA TGTTTCATCTT CACCGCTGTT GCCTACCATC AGCCTACCTT GAAGAAGCAG 1680
 GCCGCCCCCTC ACCTGAAAGC GGAGGTTGGA AACTCCATGC TGCTGACGGG CCACATCCTT 1740
 10 ATCTTGCTAG GGGGGATCTA CCTCCTCGTG GGGCCAGCTG TGGTACTTCT GCGGGCGCCA 1800
 CGTGTTCATC TGGATCTCGT TCATAGACAG CTACTTTGGA AATCCTCTTC CTGTTCCAGG 1860
 CCCTGCTTCA CAGTGGTGTC CCAGGTGCTG TGTTTCTCTG GCCATCGAGT GGTACCTGCC 1920
 15 CCTGCTMTGT TCTGCGCTGG TGGCTGGGCT GGCTGAACCT GCTTTACTAA TACACGTGGC 1980
 GTTCCAGCAC ACAGGCAGTC TACAGTTTCA TGWTCCCTGA AGCCCTGGTG AGCCTGAGCC 2040
 20 AGGAGGCTTG GCGCCCCGAA GCTCCTACAG GCCCCAATGC CACAGAGTCA GTGCAGCCCA 2100
 TGGAGGGACA GGAGGACGAG GGCAACGGG CCCAGTACAG GGGTATCCTG GAAGCCTCCT 2160
 TGGAGCTCTT CAAATTCACC ATCGGCATGG GCGAGCTGGC CTTCAGGAG CAGCTGCACT 2220
 25 TCCGCGGCAT GGTGCTGCTG CTGCTGCTGG CCTACGTGCT GCTCACCTAC ATCCTGCTGC 2280
 TCAACATGCT CATCGCCCTC ATGAAGCGAA CGTCACAGTG TCGCCACTGA CAGCTGGAGC 2340
 30 ATCTGGAAGC TGCAGAAAGC CATCTCTGTC CTGGAGATGG AGAATGGCTA TTGGTGGTGC 2400
 AGGAAAAAGC AGCGGGCAGG TGTGATGCTG ACCGTTGGCA CTAAGCCCAG ATGGCAGCCC 2460
 CGATGAGCGC TGGTGCTTCA GGGTGGAGGA GGTGAAGTGG GCTTCATGGG GAGCAGACGC 2520
 35 TGCTACGCT GTGTGAGGAC CCGTCAGGGG CAGGTGTCCC TCGAACTCTC GAGAACCCTG 2580
 TCCTGGCTTC CCTCCCAAG GAGGATGAGG ATGGTGCCCTC TGAGGAAAAC TATGTGCCCCG 2640
 40 TCCAGCTCCT CCAGTCCAAC TGATGGCCCA GATGCAGCAG GAGGCCAGAG GACAGAGCAG 2700
 AGGATCTTTC CAACCACATC TGCTGGCTCT GGGGTCCAG TGAATTCTGG TGGCAAATAT 2760
 ATATTTTTCAC TAACTCAAAA AAAAAAAAAA AAAAAAAAAA AAAAVGAGGG GGGGCCCGKT 2820
 45 ASCCAAWTTC GCCCTATAAG TGAGTGCCWA TTACGATAAA 2860

50

(2) INFORMATION FOR SEQ ID NO: 308:

(i) SEQUENCE CHARACTERISTICS:

55

- (A) LENGTH: 876 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 308:

CTGCTGTGT CTGCGCTGGT GCTGGGCTGG CTGAACCTGC TTTACTATAC ACGTGGCTTC 60
 CAGCACACAG GCATCTACAG TGTCTATGATC CAGAAGCCCT GGTGAGCCTG AGCCAGGANN 120
 - 5 TTGGCGCCCC GAAGCTCCTA CAGGCCCAA TGCCACAGAG TCAGTGCAGC CCATGGAGGG 180
 ACAGGAGGAC GAGGGCAACG GGGCCAGTA CAGGGGTATC CTGGAAGCCT CTTGGAGCT 240
 10 CTTCAAATTC ACCATCGGCA TGGGCGAGCT GGCCTTCCAG GAGCAGCTGC ACTTCCGCGG 300
 CATGGTGCTG CTGCTGCTGC TGGCTACGT GCTGCTCACC TACATCCTGC TGCTCAACAT 360
 GCTCATCGCC CTCATGNAGC GAGACCGWCA ACAGTGTGCG CACTGACAGC TGGAGCATCT 420
 15 GGAAGCTGCA GAAAGCCATC TCTGTCTTGG AGATGGAGAA TGGCTATTGG TGGTGCAGGA 480
 AGAAGCAGCG GGCAGGTGTG ATGCTGACCG TTGGCACTAA GCCAGATGGC AGCCCCGATG 540
 AGCGCTGGTG CTTCAGGGTG GAGGAGGTGA ACTGGGCTTC ATGGGAGCAG ACGCTGCCTA 600
 20 CGCTGTGTGA GGACCCGTCA GGGGCGAGTG TCCCTCGAAC TCTCGAGAAC CCTGTCTCTG 660
 CTTCCCTCC CAAGGAGGAT GAGGATGGTG CCTCTGAGGA AACTATGTG CCCGTCCAGC 720
 25 TCCTCCAGTC CAACTGATGG CCCAGATGCA GCAGGAGGCC AGAGGACAGA GCAGAGGATC 780
 TTTCACCA CATCTGCTGG CTCTGGGGTC CCAGTGAATT CTGGTGGCAA ATATATATTT 840
 TCACTAAMWM AAAAAAAAAA AAAAAAAAAA ACTCGA 876
 30

(2) INFORMATION FOR SEQ ID NO: 309:

35

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2025 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

40

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 309:

CATGACCCGC CTGATGCGAT CCCGCACAGC CTCTGGTTCC AGCGTCACTT CTCTGGATGG 60
 45 CACCCGCAGC CGCTCCACA CCAGCGAGGG CACCCGAAGC CGCTCCACA CCAGCGAGGG 120
 CACCCGCAGC CGCTCGACA CCAGCGAGGG GGCCACCTG GACATCACCC CCAACTCGGG 180
 50 TGCTGTGGG AACASGCCG GCCCAAGTCC ATGGAGGTCT CCTGCTAGGC GGCCTGCCCA 240
 GCTGCCGCC CCGACTCTG ATCTCTGTAG TGGCCCCCTC CTCCCCGGCC CTTTTCGCC 300
 CCCTGCCTGC CATACTGCGC CTAAGTGGT ATTAATCCAA AGCTTATTTT GTAAGAGTGA 360
 55 GCTCTGGTGG AGACAAATGA GGTCTATTAC GTGGGTGCC TCTCCAAAGG CGGGGTGGCG 420
 GTGGACAAA GGAAGGAAGC AAGCATCTCC GCATCGCATC CTCTCCATT AACCAGTGGC 480
 60 CGGTGGCAC TCTCTCCCC TCCCTCAGAG ACACAAACT GCCAAAACA AGACGCTAC 540

AGCACACACT TCACAAAGCC AAGCCTAGGC CGCCCTGAGC ATCCTGGTTC AAACGGGTGC 600
 CTGGTCAGAA GGCCAGCCGC CCACCTCCCG TTTCCTCTTT AACTGAGGAG AAGCTGATCC 660
 5 AGTTTCCGGA AACAAAATCC TTTTCTCAT TGGGGAGGGG GGTAAATAGTG ACATGCAGGC 720
 ACCTCTTTTA AACAGGCAAA ACAGGAAGGG GGAAAAGGTG GGATTCATGT CGAGGCTAGA 780
 10 GGCATTTGGA ACAACAAATC TACGTAGTTA ACTTGAAGAA ACCGATTTTT AAAGTTGGTG 840
 CATCTAGAAA GCTTTGAATG CAGAAGCAAA CAAGCTTGAT TTTTCTAGCA TCCTCTTAAT 900
 GTGCAGCAAA AGCAGGCRAC AAAATCTCCT GGCTTTACAG AAAAAAATAT TTCAGCAAAC 960
 15 GTTGGGCATC ATGGTTTTTG AAGGCTTTAG TTCTGCTTTC TGCCTCTCCT CCACAGCCCC 1020
 AACCTCCAC CCCTGATACA TGAGCCAGTG ATTATTCTTG TTCAGGGAGA AGATCATTTA 1080
 20 GATTGTGTTTT GCATTCCTTA GAATGGAGGG CAACATTCCA CAGCTGCCCT GGCTGTGATG 1140
 AGTGTCTTTC CAGGGGCCGG AGTAGGAGCA CTGGGGTGGG GGCGGAATTG GGGTTACTCG 1200
 ATGTAAGGGA TTCTTGTTG TTGTGTTGAG ATCCAGTGCA GTGTGATTT CTGTGGATCC 1260
 25 CAGCTTGGTT CCAGGAATTT TGTGTGATTC GCTTAAATCC AGTTTTCAAT CTTCGACAGC 1320
 TGGGCTGGAA CGTGAACCTA GTAGCTGAAC CTGTCTGACC CGGTCACGTT CTGGATCCT 1380
 30 CAGAACTCTT TGCTCTTGTC GGGGTGGGGG TGGGAACTCA CGTGGGGAGC GGTGGCTGAG 1440
 AAAATGTAAG GATTCTGGAA TACATATTCC ATGGGACTTT CCTTCCCTCT CCTGCTTCCT 1500
 CTTTTCTGTC TCCCTAACCT TTCGCCGAAT GGGGCAGCAC CACTGACGTT TCTGGGCGGC 1560
 35 CAGTGGGCT GCCAGTTCC TGTACTACTG CCTGTACTT TTCATTTTGG CTCACCGTGG 1620
 ATTTTCTCAT AGGAAGTTTG GTCAGAGTGA ATTGAATATT GTAAGTCAGC CACTGGGACC 1680
 40 CGAGGATTTT TGGGACCCCG CAGTTGGGAG GAGGAAGTAG TCCAGCCTTC CAGGTGGCGT 1740
 GAGAGGCAAT GACTCGTTAC CTGCCGCCCA TCACCTTGGA GGCCTTCCCT GGCCTTGAGT 1800
 AGAAAAGTCG GGGATCGGGG CAAGAGAGGC TGAGTACGGA TGGGAACTA TTGTGCACAA 1860
 45 GTCTTTCCAG AGGAGTTTCT TAATGAGATA TTGTATTATA TTTCAGACC AATAAATTTG 1920
 TAACCTTGCA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAATC 1980
 50 GAGGGGGGCC CGTACCCAAT TCGCCGTATA TGATCGTAAA CAATC 2025

55 (2) INFORMATION FOR SEQ ID NO: 310:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 3026 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

60

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 310:

5	TAGGCAGCAC TGAAATATCC TAACCCCTA AGCTCCAGGT GCCCTGTGGN ACGAGCAACT	60
	GGACTATAGC AGGGCTGGGC TCTGTCTTCC TGGTCATAGG CTCACTCTTT CCCCCAAATC	120
	TTCTCTGGA GCTTTGCAGC CAAGGTGCTA AAAGGAATAG GTAGGAGACC TCTTCTATCT	180
10	AATCCTTAAA AGCATAATGT TGAACATTCA TTCAACAGCT GATGCCCTAT AACCCCTGCC	240
	TGGATTTCTT CCTATTAGGC TATAAGAAGT AGCAAGATCT TTACATAATT CAGAGTGGTT	300
15	TCATTGCCTT CCTACCCTCT CTAATGGCCC CTCCATTTAT TTGACTAAAG CATCACACAG	360
	TGGCACTAGC ATTATACCAA GAGTATGAGA AATACAGTGC TTTATGGCTC TAACATTACT	420
	GCCTTCAGTA TCAAGGCTGC CTGGAGAAAG GATGGCAGCC TCAGGGCTTC CTTATGTCCT	480
20	CCACCACAAG AGCTCCTTGA TGAAGGTCAT CTTTTCCTCC TATCCTGTTC TTCCCTCCC	540
	CGCTCCTAAT GGTACGTGGG TACCCAGGCT GGTTCCTGGG CTAGGTAGTG GGGACCAAGT	600
25	TCATTACCTC CCTATCAGTT CTAGCATAGT AAACACGGT ACCAGTGTTA GTGGGAAGAG	660
	CTGGGTTCCT CTAATATACC CACTGCATCC TACTCCTACC TGGTCAACCC GCTGCTTCCA	720
	GGTATGGGAC CTGCTAAGTG TGAATTACC TGATAAGGA GAGGGAAATA CAAGGAGGGC	780
30	CTCTGGTGT TCTGGCCTCA GCCAGCTGCC CACAAGCCAT AAACCAATAA AACAAGAATA	840
	CTGAGTCAGT TTTTATCTG GGTTCCTCTC ATTCCCACTG CACTTGGTGC TGCTTTGGCT	900
35	GACTGGGAAC ACCCCATAAC TACAGAGTCT GACAGGAAGA CTGGAGACTG TCCACTTCTA	960
	GCTCGGAAC TACTGTGTAA ATAACTTTC AGAACTGCTA CCATGAAGTG AAAATGCCAC	1020
	ATTTTGCTTT ATAATTCTA CCCATGTTGG GAAAACTGG CTTTTCCTCA GCCCTTCCA	1080
40	GGGCATAAAA CTCAACCCCT TCGATAGCAA GTCCCATCAG CCTATTATTT TTTTAAAGAA	1140
	AACTTGCACT TGTTTTCTT TTTACAGTTA CTTCTTCCT GCCCCAAAAT TATAAACTCT	1200
45	AAGTGTA AAAAGTCTTA ACAACAGCTT CTGCTTGTA AAAATATGTA TTATACATCT	1260
	GTATTTTAA ATCTGCTCC TGAAAAATGA CTGTCCCAT CTCCACTCAC TGCAATTGGG	1320
	GCCTTTCCTA TTGGTCTGCA TGTCTTTTAT CATGTCAGGC CAGTGGACAG AGGGAGAAGG	1380
50	GAGAACAGG GTCGCCAACA CTTGTGTTGC TTTCTGACTG ATCCTGAACA AGAAAGAGTA	1440
	ACACTGAGGC GCTCGCTCCC ATGCACAACT CTCCAAAACA CTTATCCTCC TGCAAGAGTG	1500
55	GGCTTTCAG GGTCTTTACT GGAAGCAGT TAAGCCCCCT CTCACCCCT TCCTTTTTC	1560
	TTTCTTTACT CCTTTGGCTT CAAAGGATTT TGGAAAAGAA ACAATATGCT TTACTCAT	1620
60	TTTCAATTTC TAAATTGCA GGGGATACTG AAAAATACGG CAGGTGGCCT AAGGCTGCTG	1680

TAAAGTTGAG GGGAGAGGAA ATCTTAAGAT TACAAGATAA AAAACGAATC CCCTAAACAA 1740
 AAAGAACAAT AGAACTGGTC TTCCATTTTG CCACCTTTCC TGTTTCATGAC AGCTACTAAC 1800
 5 CTGGAGACAG TAACATTTCA TTAACCAAAG AAAGTGGGTC ACCTGACCTC TGAAGAGCTG 1860
 AGTACTCAGG CCACTCCAAT CACCCTACAA GATGCCAAGG AGGTCCCAGG AAGTCCAGCT 1920
 CCTTAAACTG ACGCTAGNMA ATAACCTGG GCAAGTGAGG CAAGAGAAAT GAGGAAGAAT 1980
 10 CCATCTGTGA GGTGAYAGGC AAGGATGAAA GACAAAGAAG GAAAAGAGTA TCAAAGGCAG 2040
 AAAGGAGATC ATTTAGTTGG GTCTGAAAGG AAAAGTCTTT GCTATCCGAC ATGTACTGCT 2100
 15 AGTACCTGTA AGCATTTTAG GTCCAGAAT GGAAAAAAA ATCAGCTATT GGTAAATATAA 2160
 TAATGTCCTT TCCCTGGAGT CAGTTTTTTT AAAAAGTTAA CTCTTAGTTT TTACTTGTTT 2220
 AATTCTAAAA GAGAAGGGAG CTGAGGCCAT TCCCTGTAGG AGTAAAGATA AAAGGATAGG 2280
 20 AAAAGATTCA AAGCTCTAAT AGAGTCACAG CTTCCTCAGG TATAAACCT AAAATTAAGA 2340
 AGTACAATAA GCAGAGGTGG AAAATGATCT AGTTCCTGAT AGCTACCCAC AGAGCAAGTG 2400
 25 ATTTATAAAT TTGAAATCCA AACTACTTTC TTAATATCAC TTTGGTCTCC ATTTTCCCA 2460
 GGACAGGAAA TATGTCCCCC CCTAACTTTC TTGCTTCAA AATTAAAATC CAGCATCCCA 2520
 AGATCATTCCT ACAAGTAATT TTGCACAGAC ATCTCCTCAC CCCAGTGCCT GTCTGGAGCT 2580
 30 CACCCAAGGT CANCCAAACA ACTTGGTTGT GAACCAACT GCCTTAACCT TCTGGGGGAG 2640
 GGGGATTAGC TAGACTAGGA GACCCAGAAG TGAATGGGAA AGGGTGAGGA CTTCACAATG 2700
 35 TTGGCCTGTC AGAGCTTGAT TAGAAGCCAA GACAGTGGCA GCAAAGGAAG ACTTGGCCCA 2760
 GGAAAAACCT GTGGGTTGTG CTAATTTCTG TCCAGAAAAT AGGGTGGACA GAAGCTTGTC 2820
 GGGTGCATGG AGGAATTGGG ACCTGGTTAT GTTGTATTTC TCGGACTGTG AATTTTGGTG 2880
 40 ATGTAAACA GAATATTCTG TAAACCTAAT GTCGTATATA ATAATGAGCG TTAACACAGT 2940
 AAAATATTCA ATAAGAAGTC AAAAAAAAAA AAAAAAACT CGAGGGGGGG CCCGGTACCC 3000
 45 AATTNCCAA ATAGAGATNG TATTAC 3026

50 (2) INFORMATION FOR SEQ ID NO: 311:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 712 base pairs

(B) TYPE: nucleic acid

55 (C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 311:

60 GCAGGCTTTG TGCTCACCTA CAAGCTGGGT GAGCAGGGTG CCAGCAGCCT GTTTCCTCTT 60

CTCCTGCTGG ACCACGGCGT TTCTGCTCCC GAGTTGGGAC TGTGGAATGG TGTGGGTGCT 120
 GTGGTCTGCT CCATCGCTGG CTCTCCCTG GGTGGGACCT TGCTGGCCAA GCACTGGAAA 180
 5 CTGCTGCCTC TGTGARGTC GGTGCTGCGC TTCCGCCTCG GGGGCCTAGC CTGTCAGACT 240
 GCCTTGGTCT TCCACCTGGA CACCCTGGGG GCCAGCATGG ACGCTGGCAC AATCTTGAGA 300
 10 GGGTCAGCCT TGCTGAGCCT ATGTCTGCAG CACTTCTTGG GAGGCCTGGT CACCACAGTC 360
 ACCTTCACTG GGATGATGCG CTGCAGCCAG CTGGCCCCCA GGGCCTGCAG GCCACACACT 420
 ACAGCCTTCT GGCCACGCTG GAGCTGCTGG GGAAGCTGCT GCTGGGCACT CTGCGGAGGC 480
 15 CTGGCTGATG GGTGGGGGCC ACATCCCTGC TTCTTGCTCC TGCTCATCCT CTCTGCCTTT 540
 CCCGTTCTGT ACCTGGACCT AGCACCAGC ACCTTTCTCT GAGCTGAGTG GCTGGAGTGG 600
 20 TCAATAAAGC CACATGTGCC TGTGGCCCAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA 660
 AACTGGAGGG GGGGCCCGGT ACCCAAATCG CCGGATATGA TCGTAAACAA TC 712

25

(2) INFORMATION FOR SEQ ID NO: 312:

30 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1289 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 312:

CAAAATTTCA GAACCTTCAG GAGGCAAGA GAATATCAA CAAAGATTTC TGGAAGTATT 60
 TTGCCAACCT TCTGGTTGAG CTGCAAGAAA ATATTTATGG TGAGAACTTT TCTGTTTCCC 120
 40 GTTATTGGGT TTTTGGTTGG TTTTGTTTG TTTTMTACTA TGCTTTGGTC TGTAAAATA 180
 TGCAACTGAA CTACATTCAG AAGGAAATAT TGTCTACATA GAATATTATA TGAAGTTGGT 240
 45 ACATAATTCT GATGAGGAAA AAAATCTTT GCAATCTTT AAGCCATATT GTTGTTTTTC 300
 TGTGTGTTT TCCCTGGATG AAAATATCAG TATTAAGTAG ACAGCATATT ATTCAAGTGT 360
 TTAGACTTAT TAATATGTTT TTGTCCTGTA TTTATACATA TGTGTATTTT GGAAAGTATT 420
 50 GCCTTTTSTA AGGGAAGCTA TAATTCGATA CATAGTGAAA AAGGGAATGG TGACCCCTTT 480
 GTGCCCTCTT CACTGAGGAT AACAAACAGC ATTGTAATCC ATTCTCTTGC ACCTTCTTCT 540
 55 TCTTATCTTG TTATTACGGT TTTATTAATT TTGTAGAGGG ACAGGGAGTG GGCAAGGGGA 600
 AGAAGCAGCT TATTTGACTA ACCAGCCCCT CTGTGGTCCA CCAGCGTCTT GGCTTGGTGG 660
 GAGGGCTCTC AATCAGCAGG GCCCCAGGAG GGAAGAAGAA GTGGGGCAA GCCTGGCCTC 720
 60

GCCGCTCGGG AGCTTTGCCA TCTGAGCCAC GCCTCCTCCA GGCCATGCTC CTTGAACTTG 780
 GAAATGTCAA CCGGAGCCCT TACACCAGCC CTCCAGCATC TAATAGACTT GAATCTACTC 840
 5 TAAACGAATA TTTAATCCAA CCTCACTACA TTGTAGCTCA GTCCAACGAC TAACCTTGAA 900
 ATGGGGGTGT TCCAGCCTTC AGCGAGATGG CCAAGCGGTC CCTGGGGGC TGTGGCAGCG 960
 GGCTTATCCT TCTCTGTTGC CAACCTTGCC GTCGACCTC CTCCGCCCCC ATGCGGTGAC 1020
 10 CCCGTCCGTG TCTGTGCTG TCCATACGTG TGAGTCCAGC TAAAAAGACA AACAGAACC 1080
 CGTGGGCCCCA GCTCGGAAGG TGCCTGGAGA AGGCTCCGAC GTCTCCGAAG TGCAGCCCTT 1140
 15 GGGATGGCAT TCCGTTGTGT GCCTTATTCC TGGAGAATCT GTATACGGCT CGCCTATAGA 1200
 AATATAGCCT CTTTCATGCTG TATTAAAAGG ACTTTTAAAA GCAAAAAAAA AAAAAAAA 1260
 CTTGAGGGGG GGNCCGGTAC CCAATTNTC 1289
 20

25 (2) INFORMATION FOR SEQ ID NO: 313:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 22 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 313:

Met Phe Leu Ile Phe Val Tyr Phe Leu Lys Ile Leu Phe Ser Ser Ser
 1 5 10 15

35 Leu Pro Phe Leu Trp Leu
 20

40 (2) INFORMATION FOR SEQ ID NO: 314:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 128 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 314:

Met Met Phe Leu Thr Gln Gly Gly Pro Leu Pro Ser Thr Arg Ala Arg
 1 5 10 15

50 Pro Thr Cys Gln Ala Gly Ala Leu Pro Lys Pro Ser Gly Leu Leu Gly
 20 25 30

55 Val Thr Cys Trp Asn Gly Leu Lys Gly Pro Leu Cys Gly Asn Arg Cys
 35 40 45

Ser Pro Asn Thr Leu Leu Leu Ala Ala Arg Gln Ala Leu Trp Lys Gly
 50 55 60

60 Arg Gly Arg Thr His Gln Asp Leu Pro Gly Pro Leu Gln Gly Arg Gln

	65					70					75					80
	Leu	Gly	Pro	Glu	Pro	Lys	His	Leu	Ala	Leu	Leu	Pro	Pro	Arg	Gly	Gln
					85					90					95	
-5	Glu	Ala	Ser	Trp	Ala	Ser	Ser	Leu	Pro	Gly	Gln	Gly	Pro	Leu	Pro	Leu
				100					105					110		
	Pro	His	Ile	Asn	Cys	Thr	Val	Phe	Ser	Leu	Lys	Ala	Ser	Phe	Ile	Lys
10			115					120					125			

15

(2) INFORMATION FOR SEQ ID NO: 315:

20 (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 28 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 315:

25 Met Gln Phe Leu Leu Thr Ala Phe Leu Leu Val Pro Leu Leu Ala Leu
1 5 10 15

Cys Asp Val Pro Ile Ser Leu Gly Phe Ser Pro Ser
20 25

30

(2) INFORMATION FOR SEQ ID NO: 316:

35 (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 64 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 316:

40 Met Asp Gly Phe Ser Ser Arg Leu Phe Ser Ser Leu Pro Phe Val Ala
1 5 10 15

Leu Gln Trp Phe Ile Val Ile Ser His Leu Leu Ser Leu Ser Leu Ser
45 20 25 30

Ala Cys Cys Tyr Gln Thr His Cys Ser Leu Xaa Gln Leu Ser Ser Ala
35 40 45

50 Phe Ser Xaa Met Gly Glu Ser Cys Val Gly Glu Arg Glu Tyr Xaa Phe
 50 55 60

55

(2) INFORMATION FOR SEQ ID NO: 317:

60 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 317:

- 5

Met Pro Leu Ile Asn Leu Leu Leu Leu Tyr Tyr Val Pro Asn Gly Gly
 1 5 10 15

Lys Gln Asp Lys Lys
 10 20

(2) INFORMATION FOR SEQ ID NO: 318:

15

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 39 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

20

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 318:

Met Gly Arg His Leu Val Leu Val Met Phe Ile Thr Thr Ser Leu His
 1 5 10 15

25 Ser Gly Thr Pro Val Pro Glu Asn Val Ile Cys Gly Val Thr Lys Gly
 20 25 30

Pro Gln Gly Lys Lys Lys Lys
 30 35

(2) INFORMATION FOR SEQ ID NO: 319:

35

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 33 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

40

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 319:

Met Leu Trp Trp Ser Arg Asp Tyr Thr Met Val Phe Leu Leu Phe Thr
 1 5 10 15

45 Met Val Phe Thr Gly Asp Leu Val Ile Arg Gly Arg Thr Glu Leu Ser
 20 25 30

Leu

50

(2) INFORMATION FOR SEQ ID NO: 320:

55

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 88 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 320:

60 Met Val Cys Ser Ser Leu Cys Asp Ile Gly Gly Ile Ile Thr Pro Phe

1 5 10 15
 Ile Val Phe Arg Leu Arg Glu Val Trp Gln Ala Leu Pro Leu Ile Leu
 20 25 30
 - 5 Phe Ala Val Leu Gly Leu Leu Ala Ala Gly Val Thr Leu Leu Leu Pro
 35 40 45
 10 Glu Thr Lys Gly Val Ala Leu Pro Glu Thr Met Lys Asp Ala Glu Asn
 50 55 60
 Leu Gly Arg Lys Ala Lys Pro Lys Glu Asn Thr Ile Tyr Leu Lys Val
 65 70 75 80
 15 Gln Thr Ser Glu Pro Ser Gly Thr
 85

20 (2) INFORMATION FOR SEQ ID NO: 321:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 23 amino acids
 (B) TYPE: amino acid
 25 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 321:

Met Gln Pro Gly Ala Gly Val Leu Val Leu Gly Leu Leu Leu Pro Pro
 1 5 10 15
 30 Pro Gln Ser Pro Ser Leu Ser
 20

35 (2) INFORMATION FOR SEQ ID NO: 322:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 27 amino acids
 40 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 322:

Met Thr Phe Thr Leu Gly Asp Ser Gln Val Leu Leu Ile Asn Leu Phe
 1 5 10 15
 45 Pro Ser Met Pro Ser Gly Ser Cys Ala Arg Pro
 20 25

50 (2) INFORMATION FOR SEQ ID NO: 323:

(i) SEQUENCE CHARACTERISTICS:
 55 (A) LENGTH: 64 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 323:

60 Met Cys Leu Glu Cys Trp Ala Glu Asn Leu Gly Pro His His Thr Ser

549

1 5 10 15
 Ser Leu Leu Asn Pro Arg His Leu Pro Ser Ile Pro Ala Met Phe Pro
 20 25 30
 5 Val Ser Ser Gly Cys Phe Gln Glu Gln Gln Glu Met Asn Lys Ser Leu
 35 40 45
 10 Val Ser Cys Leu Phe Val Leu His Phe Val Leu His Cys Ile Phe Xaa
 50 55 60

15

(2) INFORMATION FOR SEQ ID NO: 324:

(i) SEQUENCE CHARACTERISTICS:
 20 (A) LENGTH: 196 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 324:

25 Met Leu Ser Thr Ser Glu Tyr Ser Gln Ser Pro Lys Met Glu Ser Leu
 1 5 10 15
 Ser Ser His Arg Ile Asp Glu Asp Gly Glu Asn Thr Gln Ile Glu Asp
 20 25 30
 30 Thr Glu Pro Met Ser Pro Val Leu Asn Ser Lys Phe Val Pro Ala Glu
 35 40 45
 Asn Asp Ser Ile Leu Met Asn Pro Ala Gln Asp Gly Glu Val Gln Leu
 35 50 55 60
 Ser Gln Asn Asp Asp Lys Thr Lys Gly Asp Asp Thr Asp Thr Arg Asp
 65 70 75 80
 40 Asp Ile Ser Ile Leu Ala Thr Gly Cys Lys Gly Arg Glu Glu Thr Val
 85 90 95
 Ala Glu Glu Val Cys Ile Asp Leu Thr Cys Asp Ser Gly Ser Gln Ala
 100 105 110
 45 Val Pro Ser Pro Ala Thr Arg Ser Glu Ala Leu Ser Ser Val Leu Asp
 115 120 125
 Gln Glu Glu Ala Met Glu Ile Lys Glu His His Pro Glu Glu Gly Ser
 50 130 135 140
 Ser Gly Ser Glu Val Glu Glu Ile Pro Glu Thr Pro Cys Glu Ser Gln
 145 150 155 160
 55 Gly Glu Glu Leu Lys Glu Glu Asn Met Glu Ser Val Pro Leu His Leu
 165 170 175
 Ser Leu Thr Glu Thr Gln Ser Gln Gly Leu Cys Leu Arg Arg His Pro
 180 185 190
 60

Lys Lys Lys Lys
195

5

(2) INFORMATION FOR SEQ ID NO: 325:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 252 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 325:

15 Met Gly Gly Asp Leu Val Leu Gly Leu Gly Ala Leu Arg Arg Arg Lys
1 5 10 15

Arg Leu Leu Glu Gln Glu Lys Ser Leu Ala Gly Trp Ala Leu Val Leu
20 25 30

20 Ala Xaa Xaa Gly Ile Gly Leu Met Val Leu His Ala Glu Met Leu Trp
35 40 45

Phe Gly Gly Cys Ser Ala Val Asn Ala Thr Gly His Leu Ser Asp Thr
50 55 60

25 Leu Trp Leu Ile Pro Ile Thr Phe Leu Thr Ile Gly Tyr Gly Asp Val
65 70 75 80

30 Val Pro Gly Thr Met Trp Gly Lys Ile Val Cys Leu Cys Thr Gly Val
85 90 95

Met Gly Val Cys Cys Thr Ala Leu Leu Val Ala Val Val Ala Arg Lys
100 105 110

35 Leu Glu Phe Asn Lys Ala Glu Lys His Val His Asn Phe Met Met Asp
115 120 125

Ile Gln Tyr Thr Lys Glu Met Lys Glu Ser Ala Ala Arg Val Leu Gln
130 135 140

40 Glu Ala Trp Met Phe Tyr Lys His Thr Arg Arg Lys Glu Ser His Ala
145 150 155 160

Ala Arg Xaa His Gln Arg Xaa Leu Leu Ala Ala Ile Asn Ala Phe Arg
165 170 175

Gln Val Arg Leu Lys His Arg Lys Leu Arg Glu Gln Val Asn Ser Met
180 185 190

50 Val Asp Ile Ser Lys Met His Met Ile Leu Tyr Asp Leu Gln Gln Asn
195 200 205

Leu Ser Ser Ser His Arg Ala Leu Glu Lys Gln Ile Asp Thr Leu Ala
210 215 220

55 Gly Lys Leu Asp Ala Leu Thr Glu Leu Leu Ser Thr Ala Leu Gly Pro
225 230 235 240

Arg Gln Leu Pro Glu Pro Ser Gln Gln Ser Lys Xaa
60 245 250

(2) INFORMATION FOR SEQ ID NO: 326:

5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 68 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

10

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 326:

Met Trp Arg Cys Arg Gly Lys Leu Ser Phe Pro Leu Phe Ala Val Val
 1 5 10 15

Ile Val Ser Cys Arg Lys Asp Gly Pro Asp Ala Ala Ala Ala Pro Ala
 20 25 30

Val Ile Lys Asn Asn Ser His Tyr Gln Thr Ser Lys Ala Leu Glu Leu
 35 40 45

20

Glu Lys Thr Thr Glu Asn Lys Glu Ser Asn Pro Phe Ile Leu Gln Val
 50 55 60

Asn Lys Leu Xaa
 65

25

(2) INFORMATION FOR SEQ ID NO: 327:

30

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 84 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 327:

Met Gly Glu Gly Lys Asn Gly Phe Gly Gly Phe Val His Thr Ala Asp
 1 5 10 15

Ala Cys Trp Glu Gly Val His Ser Glu Pro Val Cys Arg Thr Val His
 20 25 30

Thr Val His Thr Cys His His Gln Ala Phe Leu Val Leu Ile Gly Trp
 35 40 45

45

Ser Lys Ser Gly Lys Glu Arg Lys Glu Ala Phe Leu Thr Ala Ile Ile
 50 55 60

Leu Asn Ser Arg Ser Ile His Ile Ser Cys Ser Trp Pro Pro Ser Pro
 65 70 75 80

50

Val Pro Gln Xaa

55

(2) INFORMATION FOR SEQ ID NO: 328:

(i) SEQUENCE CHARACTERISTICS:

60

(A) LENGTH: 36 amino acids

552

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 328:

- 5 Met Leu Leu Ile Asn Leu Leu Trp Leu Val Thr Met Ile Lys Ser Val
 1 5 10 15
 Ile Asn Asn Asn Ile Ile Leu Phe Leu Lys Lys Lys Ser Leu Phe Phe
 20 25 30
 10 Ile Asp Ser Val
 35

15

(2) INFORMATION FOR SEQ ID NO: 329:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 63 amino acids

20

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 329:

25 Met Thr Phe Pro Phe Glu Lys Lys Ile Val Ala Phe Ser Ala Phe Tyr
 1 5 10 15
 Leu Ile Pro Gly Glu Ser Arg Leu Ala Pro Thr Phe Asn Pro Ser Ala
 20 25 30
 30 Asp Met Thr Val Ile Leu Arg Gly Arg Ala Gln His Lys Thr Ala Met
 35 40 45
 Leu Glu Ser Tyr Asn Trp Lys Val Ser Cys Gln Leu Arg Glu Xaa
 50 55 60
 35

(2) INFORMATION FOR SEQ ID NO: 330:

40

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 35 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 330:

45

Met His Ser Lys Gly Ser Ser Leu Leu Leu Phe Leu Pro Gln Leu Ile
 1 5 10 15
 Leu Ile Leu Pro Val Cys Ala His Leu His Glu Glu Leu Asn Cys Cys
 20 25 30
 Phe His Arg
 35

55

(2) INFORMATION FOR SEQ ID NO: 331:

(i) SEQUENCE CHARACTERISTICS:

60

(A) LENGTH: 23 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 331:

5 Met Gly Ala Leu Val Leu Leu Leu Cys Leu Leu Val Gly Val Gln Gln
 1 5 10 15
 Ser Gly Ser Val Trp Asp Ser
 20

10

(2) INFORMATION FOR SEQ ID NO: 332:

15

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 40 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 332:

20

Met Gln Ser Ala Glu Ile Leu Ser Trp Thr Asp Val Leu His Asp Phe
 1 5 10 15

25

Leu Phe Ser Leu Phe Leu Trp Pro Ala Phe Glu Asp Arg Ala Leu Leu
 20 25 30

Ile Phe Thr Leu Asn Gln Ile Val
 35 40

30

(2) INFORMATION FOR SEQ ID NO: 333:

35

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 111 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 333:

40

Met Gln Ser Leu Val Gln Trp Gly Leu Asp Ser Tyr Asp Tyr Leu Gln
 1 5 10 15

Asn Ala Pro Pro Gly Phe Phe Pro Arg Leu Gly Val Ile Gly Phe Ala
 20 25 30

45

Gly Leu Ile Gly Leu Leu Leu Ala Arg Gly Ser Lys Ile Lys Lys Leu
 35 40 45

50

Val Tyr Pro Pro Gly Phe Met Gly Leu Ala Ala Ser Leu Tyr Tyr Pro
 50 55 60

Gln Gln Ala Ile Val Phe Ala Gln Val Ser Gly Glu Arg Leu Tyr Asp
 65 70 75 80

55

Trp Gly Leu Arg Gly Tyr Ile Val Ile Glu Asp Leu Trp Lys Glu Asn
 85 90 95

Phe Gln Lys Pro Gly Asn Val Lys Asn Ser Pro Gly Thr Lys Xaa
 100 105 110

60

(2) INFORMATION FOR SEQ ID NO: 334:

5 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 106 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 334:

10 Met Ala Pro Ser Leu Leu Leu Leu Ala Pro Leu Cys Ser Leu Glu Ala
 1 5 10 15

Val Leu Ser Ser Pro Leu Glu Lys Gln Cys Gln Leu Pro Gly Ile Phe
 15 20 25 30

Cys Gln Leu Gln Leu Pro Cys Pro Leu Leu Leu Ser Ala Gln Leu Leu
 35 40 45

20 Lys Gly Ile Val Xaa Pro Arg Cys Pro Ala Ser Leu Pro Gln Pro Pro
 50 55 60

His Pro Ala Pro Ser Trp His Leu Pro Leu His Cys Thr Glu Arg Xaa
 65 70 75 80

25 Pro His His Leu Pro Leu Gln Gly Gly Ser Ser Asn Met Glu Glu Xaa
 85 90 95

30 Asn Tyr Arg Gly Tyr Xaa Asp Ala Gln Leu
 100 105

(2) INFORMATION FOR SEQ ID NO: 335:

35 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 50 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 335:

40 Met Thr Thr Cys Leu Phe Gly Leu Leu Ser Cys Glu Met Ser Ala Gln
 1 5 10 15

45 Val Ser Gln Lys Ser Cys Val Tyr Asp Glu Ser Glu Cys Phe Ser Ser
 20 25 30

Val Gly Gln Leu Leu Ala Leu Leu Ile Leu Val Tyr Val Leu Pro Ser
 35 40 45

50 Ile Xaa
 50

55

(2) INFORMATION FOR SEQ ID NO: 336:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 48 amino acids
 (B) TYPE: amino acid

60

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 336:

5 Met Leu Trp Lys Cys Ser Gln Asn Ile Ala Arg Cys Leu Leu Leu Leu
 1 5 10 15

Leu Ala Leu Val Glu Ile Lys Leu Glu Asp Leu Gln Ser Gln Leu His
 20 25 30

10 Pro Thr Trp Lys Ser Ile Pro Gly Pro Ser Pro Arg Asn Gln His Arg
 35 40 45

15

(2) INFORMATION FOR SEQ ID NO: 337:

20

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 41 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 337:

25

Met Leu Ile Pro Leu Gln Cys Leu Phe Ser Ser Asp Arg Met Leu Thr
 1 5 10 15

Phe Leu Thr Pro Trp Gln Lys Gly Glu Lys Cys Val Leu Gly Trp Val
 20 25 30

Thr Lys Phe Leu Ser Glu Ile Ser Xaa
 35 40

35

(2) INFORMATION FOR SEQ ID NO: 338:

40

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 76 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 338:

45

Met Thr Phe Ser Ser Leu Lys Leu Phe Val Leu Thr Cys Ile Ile Lys
 1 5 10 15

Gly Leu Glu Arg Phe Ile Ile Leu Arg Glu Val Cys Asn Gln Glu Ile
 20 25 30

50 Gln Arg Ser Leu Ser Ser Asn Leu Val His Val Leu Leu Gln Pro Ala
 35 40 45

Thr Phe Lys Asp Val Leu Val Thr Glu Ile Ile Cys Leu Cys Met Cys
 55 60

Leu Tyr Ser Ile Lys Tyr Met Pro Pro Gln Lys Lys
 65 70 75

60

(2) INFORMATION FOR SEQ ID NO: 339:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 31 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 339:

5 Lys Val Tyr Ile Phe Leu Ile Phe Met Val Leu Ile Leu Pro Ser Leu
1 5 10 15

Gly Leu Thr Arg Tyr Met Pro Pro Xaa Ser Xaa Leu Asn Ser Glu
20 25 30

15

(2) INFORMATION FOR SEQ ID NO: 340:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 42 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 340:

20 Met Ala Lys Ile Ser Pro Phe Glu Val Val Lys Arg Thr Ser Val Pro
1 5 10 15

30 Val Leu Val Gly Leu Val Ile Val Ile Val Ala Thr Glu Leu Met Val
20 25 30

Pro Gly Thr Ala Ala Ala Val Thr Gly Lys
35 40

35

(2) INFORMATION FOR SEQ ID NO: 341:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 341:

45 Met Arg Leu Phe Phe Ile Gly Phe Leu Leu Leu Phe Ser Phe Gly Leu
1 5 10 15

Leu Arg Gln Pro Ser Leu Ser Ala Glu His
20 25

50

(2) INFORMATION FOR SEQ ID NO: 342:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 342:

60

Met Val Phe Ser Val Ser Ser Ala Leu Ala Leu Leu Leu Met Leu Leu
 1 5 10 15

5 Arg Ser Ser Asp Leu Ala Lys Lys Thr Glu
 20 25

10 (2) INFORMATION FOR SEQ ID NO: 343:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 157 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

15 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 343:

Met Ser Leu Glu Phe Tyr Gln Lys Lys Lys Ser Arg Trp Pro Phe Ser
 1 5 10 15

20 Asp Glu Cys Ile Pro Trp Glu Val Trp Thr Val Lys Val His Val Val
 20 25 30

Ala Leu Ala Thr Glu Gln Glu Arg Gln Ile Cys Arg Glu Lys Val Gly
 35 40 45

25 Glu Lys Leu Cys Glu Lys Ile Ile Asn Ile Val Glu Val Met Asn Arg
 50 55 60

30 His Glu Tyr Leu Pro Lys Met Pro Thr Gln Ser Glu Val Asp Asn Val
 65 70 75 80

Phe Asp Thr Gly Leu Arg Asp Val Gln Pro Tyr Leu Tyr Lys Ile Ser
 85 90 95

35 Phe Gln Ile Thr Asp Ala Leu Gly Thr Ser Val Thr Thr Thr Met Arg
 100 105 110

Arg Leu Ile Lys Asp Thr Leu Pro Ser Glu Arg Arg Trp Ile Ser Gly
 115 120 125

40 Ser Ser Leu Met Ala Pro Arg Pro Trp Leu Leu Gly Ile Ala Leu Leu
 130 135 140

45 Gly Leu Trp Ala Leu Glu Pro Ala Leu Gly His Trp Xaa
 145 150 155

50 (2) INFORMATION FOR SEQ ID NO: 344:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 520 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 344:

Met Phe Leu Leu Pro Leu Pro Ala Ala Gly Arg Val Val Val Arg Arg
 1 5 10 15

60 Leu Ala Val Arg Arg Phe Gly Ser Arg Ser Leu Ser Thr Ala Asp Met

				20					25					30					
				Thr	Lys	Gly	Leu	Val	Leu	Gly	Ile	Tyr	Ser	Lys	Glu	Lys	Glu	Asp	Asp
				35					40					45					
- 5				Val	Pro	Gln	Phe	Thr	Ser	Ala	Gly	Glu	Asn	Phe	Asp	Lys	Leu	Leu	Ala
				50					55					60					
				Gly	Lys	Leu	Arg	Glu	Thr	Leu	Asn	Ile	Ser	Gly	Pro	Pro	Leu	Lys	Ala
10				65				70					75					80	
				Gly	Lys	Thr	Arg	Thr	Phe	Tyr	Gly	Leu	His	Gln	Asp	Phe	Pro	Ser	Val
							85				90						95		
15				Val	Leu	Val	Gly	Leu	Gly	Lys	Lys	Ala	Ala	Gly	Ile	Asp	Glu	Gln	Glu
							100				105					110			
				Asn	Trp	His	Glu	Gly	Lys	Glu	Asn	Ile	Arg	Ala	Ala	Val	Ala	Ala	Gly
20							115				120					125			
				Cys	Arg	Gln	Ile	Gln	Asp	Leu	Glu	Leu	Ser	Ser	Val	Glu	Val	Asp	Pro
				130					135					140					
				Cys	Gly	Asp	Ala	Gln	Ala	Ala	Ala	Glu	Gly	Ala	Val	Leu	Gly	Leu	Tyr
25				145				150					155					160	
				Glu	Tyr	Asp	Asp	Leu	Lys	Gln	Lys	Lys	Lys	Met	Ala	Val	Ser	Ala	Lys
							165					170					175		
30				Leu	Tyr	Gly	Ser	Gly	Asp	Gln	Glu	Ala	Trp	Gln	Lys	Gly	Val	Leu	Phe
							180				185					190			
				Ala	Ser	Gly	Gln	Asn	Leu	Ala	Arg	Gln	Leu	Met	Glu	Thr	Pro	Ala	Asn
35							195				200					205			
				Glu	Met	Thr	Pro	Thr	Arg	Phe	Ala	Glu	Ile	Ile	Glu	Lys	Asn	Leu	Lys
				210					215					220					
				Ser	Ala	Ser	Ser	Lys	Thr	Glu	Val	His	Ile	Arg	Pro	Lys	Ser	Trp	Ile
40				225				230					235					240	
				Glu	Glu	Gln	Ala	Met	Gly	Ser	Phe	Leu	Ser	Val	Ala	Lys	Gly	Ser	Asp
							245					250					255		
45				Glu	Pro	Pro	Val	Phe	Leu	Glu	Ile	His	Tyr	Lys	Gly	Ser	Pro	Asn	Ala
							260				265					270			
				Asn	Glu	Pro	Pro	Leu	Val	Phe	Val	Gly	Lys	Gly	Ile	Thr	Phe	Asp	Ser
50							275				280				285				
				Gly	Gly	Ile	Ser	Ile	Lys	Ala	Ser	Ala	Asn	Met	Asp	Leu	Met	Arg	Ala
				290					295					300					
				Asp	Met	Gly	Gly	Ala	Ala	Thr	Ile	Cys	Ser	Ala	Ile	Val	Ser	Ala	Ala
55				305				310					315					320	
				Lys	Leu	Asn	Leu	Pro	Ile	Asn	Ile	Ile	Gly	Leu	Ala	Pro	Leu	Cys	Glu
							325					330				335			
60				Asn	Met	Pro	Ser	Gly	Lys	Ala	Asn	Lys	Pro	Gly	Asp	Val	Val	Arg	Ala

340 345 350
 Lys Asn Gly Lys Thr Ile Gln Val Asp Asn Thr Asp Ala Glu Gly Arg
 355 360 365
 - 5 Leu Ile Leu Ala Asp Ala Leu Cys Tyr Ala His Thr Phe Asn Pro Lys
 370 375 380
 Xaa Ile Leu Asn Ala Ala Thr Leu Thr Gly Ala Met Asp Val Ala Leu
 10 385 390 395 400
 Gly Ser Gly Ala Thr Gly Val Phe Thr Asn Ser Ser Trp Leu Trp Asn
 405 410 415
 15 Lys Leu Phe Glu Ala Ser Ile Glu Thr Gly Asp Arg Val Trp Arg Met
 420 425 430
 Pro Leu Phe Glu His Tyr Thr Arg Gln Val Val Asp Cys Gln Leu Ala
 435 440 445
 20 Asp Val Asn Asn Ile Gly Lys Tyr Arg Ser Ala Gly Ala Cys Thr Ala
 450 455 460
 Ala Ala Phe Leu Lys Glu Phe Val Thr His Pro Lys Trp Ala His Leu
 25 465 470 475 480
 Asp Ile Ala Gly Val Met Thr Asn Lys Asp Glu Val Pro Tyr Leu Arg
 485 490 495
 30 Lys Gly Met Thr Gly Arg Pro Thr Arg Thr Leu Ile Glu Phe Leu Leu
 500 505 510
 Arg Phe Ser Gln Asp Asn Ala Xaa
 515 520
 35

(2) INFORMATION FOR SEQ ID NO: 345:

40 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 39 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 345:
 45 Thr Ile Leu Phe Leu Phe Leu Gln Leu Ser Ala Leu Arg Leu Ile Val
 1 5 10 15
 Gly Lys Asp Ser Ile Asp Ile Asp Ile Ser Ser Arg Arg Arg Glu Asp
 50 20 25 30
 Gln Ser Leu Arg Leu Asn Ala
 35

55

(2) INFORMATION FOR SEQ ID NO: 346:

60 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 234 amino acids

560

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 346:

```

- 5  Met Thr Ser Glu Leu Asp Ile Phe Val Gly Asn Thr Thr Leu Ile Asp
      1              5              10              15

      Glu Asp Val Tyr Arg Leu Trp Leu Asp Gly Tyr Ser Val Thr Asp Ala
              20              25              30
10  Val Ala Leu Arg Val Arg Ser Gly Ile Leu Glu Gln Thr Gly Ala Thr
      35              40              45

      Ala Ala Val Leu Gln Ser Asp Thr Met Asp His Tyr Arg Thr Phe His
15      50              55              60

      Met Leu Glu Arg Leu Leu His Ala Pro Pro Lys Leu Leu His Gln Leu
      65              70              75              80
20  Ile Phe Gln Ile Pro Pro Ser Arg Gln Ala Leu Leu Ile Glu Arg Tyr
              85              90              95

      Tyr Ala Phe Asp Glu Ala Phe Val Arg Glu Val Leu Gly Lys Lys Leu
              100              105              110
25  Ser Lys Gly Thr Lys Lys Asp Leu Asp Asp Ile Ser Thr Lys Thr Gly
      115              120              125

      Ile Thr Leu Lys Ser Cys Arg Arg Gln Phe Asp Asn Phe Lys Arg Val
30      130              135              140

      Phe Lys Val Val Glu Glu Met Arg Gly Ser Leu Val Asp Asn Ile Gln
      145              150              155              160
35  Gln His Phe Leu Leu Ser Asp Arg Leu Ala Arg Asp Tyr Ala Ala Ile
              165              170              175

      Val Phe Phe Ala Asn Asn Arg Phe Glu Thr Gly Lys Lys Lys Leu Gln
              180              185              190
40  Tyr Leu Ser Phe Gly Asp Phe Ala Phe Cys Ala Glu Leu Met Ile Gln
      195              200              205

      Asn Trp Thr Leu Gly Pro Val Asp Ser Gln Met Asp Asp Met Asp Met
45      210              215              220

      Asp Leu Asp Arg Asn Phe Ser Arg Thr Xaa
      225              230

```

50

(2) INFORMATION FOR SEQ ID NO: 347:

(i) SEQUENCE CHARACTERISTICS:

55

(A) LENGTH: 169 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 347:

60

Met Ala Ala Ala Val Ala Gly Met Leu Arg Gly Gly Leu Leu Pro Gln

561

1 5 10 15
 Ala Gly Arg Leu Pro Thr Leu Gln Thr Val Arg Tyr Gly Ser Lys Ala
 20 25 30
 5 Val Thr Arg His Arg Arg Val Met His Phe Gln Arg Gln Lys Leu Met
 35 40 45
 Ala Val Thr Glu Tyr Ile Pro Pro Lys Pro Ala Ile His Pro Ser Cys
 10 50 55 60
 Leu Pro Ser Pro Pro Ser Pro Pro Gln Glu Glu Ile Gly Leu Ile Arg
 65 70 75 80
 15 Leu Leu Arg Arg Glu Ile Ala Ala Val Phe Gln Asp Asn Arg Met Ile
 85 90 95
 Ala Val Cys Gln Asn Val Ala Leu Ser Ala Glu Asp Lys Leu Leu Ile
 100 105 110
 20 Ala Thr Pro Ala Ala Glu Thr Gln Asp Pro Asp Glu Gly Leu Pro Gln
 115 120 125
 Pro Gly Pro Glu Ser Pro Ser Trp Arg Ile Pro Ser Thr Lys Ile Cys
 25 130 135 140
 Cys Pro Phe Leu Trp Gly Thr Thr Cys Cys Trp Ser Val Lys Ser Pro
 145 150 155 160
 30 Arg Ser Arg Arg Trp Tyr Gly Ser Xaa
 165

35 (2) INFORMATION FOR SEQ ID NO: 348:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 43 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

40

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 348:

Met Lys Arg Ser Phe Leu Leu Pro Leu Leu Leu Val Gly Phe Leu Asp
 1 5 10 15
 45 Thr Ala His Leu Ile Leu Leu Glu Thr Leu Ser Val Cys Leu Trp Leu
 20 25 30
 Pro Ser Leu Ile Asp Ser Arg Cys Val Met Ser
 50 35 40

55 (2) INFORMATION FOR SEQ ID NO: 349:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 349:

Met Lys Glu Gly Pro Pro Cys Lys Arg His His Tyr Tyr Gln Asn Cys
 1 5 10 15
 5 Gly Ala Lys Leu Leu Val Ser Leu Phe Gly Glu Thr Asn Gln Ile His
 20 25 30
 Leu Leu Glu Thr Gln Val Gly Thr Glu Lys Gly Gly Glu Arg Ile Trp
 35 40 45
 10 Glu Glu Lys Trp Arg Ile Ser Ser Thr Val Leu Phe Ile Ser Val Asn
 50 55 60
 Ser Tyr Val Glu Gly Ser Val Leu Glu Ile Lys Leu Phe Tyr
 15 65 70 75

20 (2) INFORMATION FOR SEQ ID NO: 350:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 350:

Met Ser Glu Ile Leu Ser Leu Leu Phe Cys Leu Leu Gly Pro Ala Leu
 1 5 10 15
 30 Asp Glu Arg Arg Glu Glu Lys Asp
 20

35 (2) INFORMATION FOR SEQ ID NO: 351:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 274 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

40 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 351:

Met Ser Ser Ala Gly Thr Ala Thr Pro Leu Glu Met Asp His Lys Leu
 1 5 10 15
 45 Thr Ser Gln Pro Gly Arg Pro Ser Phe Tyr Cys Asn Ser Arg His Ser
 20 25 30
 Ile Val Gly Ser Ser His Gln Leu Gly Phe Trp Phe Ser His Leu Glu
 35 40 45
 Ser Ser Gly Leu Lys Val Phe Gln Val Ser Leu Pro Cys Glu Cys Val
 50 55 60
 55 Asn Leu Pro Thr Arg Ile Ala Ser Val Val Leu Ser Leu Met Ser Leu
 65 70 75 80
 Leu Val Val Gly Gln Ala Pro Ala Trp Glu Gly Ser Leu Leu Arg Gly
 85 90 95
 60

Arg Pro Ala Gly Gly Ala His Leu Cys Ala Met Xaa Val Ile Glu Gly
 100 105 110
 5 Leu Val Val Asp Val Gly Glu Arg Ile Leu His Gly Gln Arg Glu Val
 115 120 125
 Gly Gln Val Ser Gln Val Leu Pro Ala Leu Ser Leu Gly Leu Val Phe
 130 135 140
 10 Leu Cys Gln Gly Thr Val Glu Lys Val Ser Gly Ala Ala His Cys Ser
 145 150 155 160
 Ser Leu Leu Cys Cys Leu Pro Trp Gln Cys Ser Gly Gly Gly Phe Pro
 165 170 175
 15 Thr Xaa Arg Cys Ser Arg Pro Tyr Phe Ser Ser His Lys Gly Val Ala
 180 185 190
 20 Ala Thr Leu Ala Leu Thr Cys His Cys Asp Lys Val His Val Ala Gly
 195 200 205
 Leu Gly Lys Asp Trp Ala Ile Glu Gln Arg Arg Arg Thr Cys Glu Ser
 210 215 220
 25 Asp Xaa Glu Xaa Xaa Pro Phe Thr Leu Ala Gly Leu Val Leu Val Leu
 225 230 235 240
 Arg Phe Cys Gln Val Val Leu Val Trp Ile Pro Gln Leu Gly Asp Lys
 245 250 255
 30 His Trp Arg Gly Met Thr Arg Leu Gly Arg Val Ser Leu Thr Ser Ser
 260 265 270
 Ile Xaa
 35

(2) INFORMATION FOR SEQ ID NO: 352:

40

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 47 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 352:

Met Ile Phe Thr Ser Val Thr Lys Gly Ile Leu Leu Ile Ala Leu Trp
 1 5 10 15
 50 Val Pro Leu Phe His Phe Met Leu Ile Asp Ser Ile Leu Gly Pro Ser
 20 25 30
 Arg Leu Leu Thr Asp Gly Val Pro Phe Asn Pro Trp His Val Xaa
 35 40 45
 55

(2) INFORMATION FOR SEQ ID NO: 353:

60

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 3 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 353:

5

Met Lys Thr
 1

10

(2) INFORMATION FOR SEQ ID NO: 354:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 52 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

15

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 354:

Met Ser Ile Ser Gly Thr Asp Gly Leu Ile Leu Leu Leu Val Gly Leu
 20 1 5 10 15
 Glu Ala Xaa Val Arg Ser Ser Lys Lys Trp Ile Pro Lys Ala Leu Xaa
 20 25 30
 Val Thr Gln Ala Lys Trp Asn Ser Trp Pro Ser Arg Arg Asn Ala Gly
 25 35 40 45
 Phe Ala Leu His
 30 50

30

(2) INFORMATION FOR SEQ ID NO: 355:

35

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 132 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

40

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 355:

Met Glu His Cys Leu Tyr His Ser Val His Gly Ile Asn Pro Tyr Ile
 1 5 10 15
 His Lys Asn Thr His Pro Ser Ile Asn Ile Tyr Met Val Trp Asp Glu
 45 20 25 30
 Gln Val Asn Ser Phe Glu Arg Glu Phe Val Pro Phe Phe Phe Leu Ile
 35 40 45
 Ile Leu Leu Asn Cys Cys Gln Leu Ser Asn Lys Gln Thr Glu Lys Leu
 50 55 60
 Phe Gly Lys Thr Leu His Thr Pro Phe Leu Ser Ser Ala Leu Lys Tyr
 65 70 75 80
 Arg Leu Asn Thr His Ile Leu Pro Val Phe Ser Tyr Ser Asp Ser Ile
 85 90 95
 Leu Thr Cys His Leu Ile Leu Ala Ser Tyr Phe Ser His Val Tyr Leu
 60 100 105 110

Pro Val Thr Cys Ile Cys Tyr Leu Asn Arg Lys Lys Asn Ile Gln Lys
 115 120 125

5 Lys Lys Asn Xaa
 130

10 (2) INFORMATION FOR SEQ ID NO: 356:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 204 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

15 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 356:

Met Gly Ser Arg Asp His Leu Phe Lys Val Leu Val Val Gly Asp Ala
 1 5 10 15

20 Ala Val Gly Lys Thr Ser Leu Val Gln Asp Tyr Ser Gln Asp Ser Phe
 20 25 30

25 Ser Lys His Tyr Lys Ser Thr Val Gly Val Asp Phe Ala Leu Lys Val
 35 40 45

Leu Gln Trp Ser Asp Tyr Glu Ile Val Arg Leu Gln Leu Trp Asp Ile
 50 55 60

30 Ala Gly Gln Glu Arg Phe Thr Ser Met Thr Arg Leu Tyr Tyr Arg Asp
 65 70 75 80

Ala Ser Ala Cys Val Ile Met Phe Asp Val Thr Asn Ala Thr Thr Phe
 85 90 95

35 Ser Asn Ser Gln Arg Trp Lys Gln Asp Leu Asp Ser Lys Leu Thr Leu
 100 105 110

40 Pro Asn Gly Glu Pro Val Pro Cys Leu Leu Leu Ala Asn Lys Cys Asp
 115 120 125

Leu Ser Pro Trp Ala Val Ser Arg Asp Gln Ile Asp Arg Phe Ser Lys
 130 135 140

45 Glu Asn Gly Phe Thr Gly Trp Thr Glu Thr Ser Val Lys Glu Asn Lys
 145 150 155 160

Asn Ile Asn Glu Ala Met Arg Val Leu Ile Glu Lys Met Met Arg Asn
 165 170 175

50 Ser Thr Glu Asp Ile Met Ser Leu Ser Thr Gln Gly Asp Tyr Ile Asn
 180 185 190

55 Leu Gln Thr Lys Ser Ser Ser Trp Ser Cys Cys Xaa
 195 200

60 (2) INFORMATION FOR SEQ ID NO: 357:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 47 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

- 5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 357:

Met Ile Ser Leu Ile Phe Gln Leu Glu Glu Lys Leu Val Glu Lys
 1 5 10 15

10 Phe Phe Phe Phe Leu Phe Phe Phe Leu Lys Lys Gly Ser Gln Gly Ser
 20 25 30

Asn Leu Lys Ile Val Pro Arg His Met Arg Val Val Leu Arg Gly
 35 40 45

15

(2) INFORMATION FOR SEQ ID NO: 358:

20 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 73 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 358:

Met Thr Tyr Val Thr Cys Leu His Val Cys Leu Leu Val Glu Phe Leu
 1 5 10 15

30 Asn Ser Gln Leu Thr Asn His Arg Lys Tyr Tyr Phe Leu Ser Tyr Gly
 20 25 30

Phe Trp Phe Thr Gly Leu Arg Gly Phe Ser Glu Tyr Leu Trp Pro Gln
 35 40 45

35 Gln His Thr Ser Phe His Pro Asn Arg Asn Glu Ile Asn Phe Val Ser
 50 55 60

Thr Asp Asn Arg Ile Trp Val Thr Xaa
 65 70

40

(2) INFORMATION FOR SEQ ID NO: 359:

45 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 102 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 359:

Met Ser Asp Gln Glu Ala Lys Pro Ser Thr Glu Asp Leu Gly Asp Lys
 1 5 10 15

55 Lys Glu Gly Glu Tyr Ile Lys Leu Lys Val Ile Gly Gln Asp Ser Ser
 20 25 30

Glu Ile His Phe Lys Val Lys Met Thr Thr His Leu Lys Lys Leu Lys
 35 40 45

60 Glu Ser Tyr Cys Gln Arg Gln Gly Val Pro Met Asn Ser Leu Arg Phe

15

(D) TOPOLOGY: linear

20

30

35

(D) TOPOLOGY: linear

55

Glu Ala Arg Asn Leu Pro Pro Leu Thr Glu Ala Gln Lys Asn Lys Leu
60 85 90 95

Arg His Leu Ser Val Val Thr Leu Ala Ala Lys Val Lys Cys Ile Pro
 100 105 110

5 Tyr Ala Val Leu Leu Glu Ala Leu Ala Leu Arg Asn Val Arg Gln Leu
 115 120 125

Glu Asp Leu Val Ile Glu Ala Val Tyr Ala Asp Val Leu Arg Gly Ser
 130 135 140

10 Leu Asp Gln Arg Asn Gln Arg Leu Glu Val Asp Tyr Ser Ile Gly Arg
 145 150 155 160

15 Asp Ile Gln Arg Gln Asp Leu Ser Ala Ile Ala Arg Thr Leu Xaa Lys
 165 170 175

Asn His Xaa

20

(2) INFORMATION FOR SEQ ID NO: 362:

(i) SEQUENCE CHARACTERISTICS:
 25 (A) LENGTH: 25 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 362:

30 Met Lys Ser Ser Ser Leu Phe Phe Phe Phe Leu Ala His Phe Ile His
 1 5 10 15

Ser His Asp Leu Pro Gly Leu Cys Arg
 20 25

35

(2) INFORMATION FOR SEQ ID NO: 363:

40 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 224 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 363:

45

Met Lys Phe Ala Ala Ser Gly Xaa Phe Leu His His Met Ala Gly Leu
 1 5 10 15

50 Ser Ser Ser Lys Leu Ser Met Ser Lys Ala Leu Pro Leu Thr Lys Val
 20 25 30

Val Gln Asn Asp Ala Tyr Thr Ala Pro Ala Leu Pro Ser Ser Ile Arg
 35 40 45

55 Thr Lys Ala Leu Thr Asn Met Ser Arg Thr Leu Val Asn Lys Glu Glu
 50 55 60

Pro Pro Lys Glu Leu Pro Ala Ala Glu Pro Val Leu Ser Pro Leu Glu
 65 70 75 80

60

	Gly	Thr	Lys	Met	Thr	Val	Asn	Asn	Leu	His	Pro	Arg	Val	Thr	Glu	Glu
					85					90					95	
- 5	Asp	Ile	Val	Glu	Leu	Phe	Cys	Val	Cys	Gly	Ala	Leu	Lys	Arg	Ala	Arg
				100					105					110		
	Leu	Val	His	Pro	Gly	Val	Ala	Glu	Val	Val	Phe	Val	Lys	Lys	Asp	Asp
			115					120					125			
10	Ala	Ile	Thr	Ala	Tyr	Lys	Lys	Tyr	Asn	Asn	Arg	Cys	Leu	Asp	Gly	Gln
		130					135					140				
	Pro	Met	Lys	Cys	Asn	Leu	His	Met	Asn	Gly	Asn	Val	Ile	Thr	Ser	Asp
15	145					150					155					160
	Gln	Pro	Ile	Leu	Leu	Arg	Leu	Ser	Asp	Ser	Pro	Ser	Met	Lys	Lys	Glu
				165						170					175	
	Ser	Glu	Leu	Pro	Arg	Arg	Val	Asn	Ser	Ala	Ser	Ser	Ser	Asn	Pro	Pro
20				180					185					190		
	Ala	Glu	Val	Asp	Pro	Asp	Thr	Ile	Leu	Lys	Ala	Leu	Phe	Lys	Ser	Ser
			195					200					205			
25	Gly	Ala	Ser	Xaa	Thr	Thr	Gln	Pro	Thr	Glu	Phe	Lys	Ile	Lys	Leu	Xaa
	210						215					220				

30

(2) INFORMATION FOR SEQ ID NO: 364:

35

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 349 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 364:

40

Met Ser Lys Asn Cys Ile Lys Leu Leu Cys Glu Asp Pro Val Phe Ala
1 5 10 15

45

Glu Tyr Ile Lys Cys Ile Leu Met Asp Glu Arg Thr Phe Leu Asn Asn
20 25 30

Asn Ile Val Tyr Thr Phe Met Thr His Phe Leu Leu Lys Val Gln Ser
35 40 45

50

Gln Val Phe Ser Glu Ala Asn Cys Ala Asn Leu Ile Ser Thr Leu Ile
50 55 60

55

Thr Asn Leu Ile Ser Gln Tyr Gln Asn Leu Gln Ser Asp Phe Ser Asn
65 70 75 80

Arg Val Glu Ile Ser Lys Ala Ser Ala Ser Leu Asn Gly Asp Leu Arg
85 90 95

60

Ala Leu Ala Leu Leu Leu Ser Val His Thr Pro Lys Gln Leu Asn Pro
100 105 110

Ala Leu Ile Pro Thr Leu Gln Glu Leu Leu Ser Lys Cys Arg Thr Cys
115 120 125

5 Leu Gln Gln Arg Asn Ser Leu Gln Glu Gln Glu Ala Lys Glu Arg Lys
130 135 140

Thr Lys Asp Asp Glu Gly Ala Thr Pro Ile Lys Arg Arg Arg Val Ser
145 150 155 160

10 Ser Asp Glu Glu His Thr Val Asp Ser Cys Ile Ser Asp Met Lys Thr
165 170 175

Glu Thr Arg Glu Val Leu Thr Pro Thr Ser Thr Ser Asp Asn Glu Thr
15 180 185 190

Arg Asp Ser Ser Ile Ile Asp Pro Gly Thr Glu Gln Asp Leu Pro Ser
195 200 205

20 Pro Glu Asn Ser Ser Val Lys Glu Tyr Arg Met Glu Val Pro Ser Ser
210 215 220

Phe Ser Glu Asp Met Ser Asn Ile Arg Ser Gln His Ala Glu Glu Gln
225 230 235 240

25 Ser Asn Asn Gly Arg Tyr Asp Asp Cys Lys Glu Phe Lys Asp Leu His
245 250 255

Cys Ser Lys Asp Ser Thr Leu Ala Glu Glu Glu Ser Glu Phe Pro Ser
30 260 265 270

Thr Ser Ile Ser Ala Val Leu Ser Asp Leu Ala Asp Leu Arg Ser Cys
275 280 285

35 Asp Gly Gln Ala Leu Pro Ser Gln Asp Pro Glu Val Ala Leu Ser Leu
290 295 300

Ser Cys Gly His Ser Arg Gly Leu Phe Ser His Met Gln Gln His Asp
305 310 315 320

40 Ile Leu Asp Thr Leu Cys Arg Thr Ile Glu Ser Thr Ile His Val Val
325 330 335

Thr Arg Ile Ser Gly Lys Gly Asn Gln Ala Ala Ser Xaa
45 340 345

(2) INFORMATION FOR SEQ ID NO: 365:

50

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 467 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 365:

Met Leu His Gln Asp His Ile Thr Phe Ala Met Leu Leu Ala Arg Ile
1 5 10 15

60 Lys Leu Lys Gly Thr Val Gly Glu Pro Thr Tyr Asp Ala Glu Phe Gln

	20	25	30
	His Phe Leu Arg Gly Asn Glu Ile Val Leu Ser Ala Gly Ser Thr Pro		
	35	40	45
5	Arg Ile Gln Gly Leu Thr Val Glu Gln Ala Glu Ala Val Val Arg Leu		
	50	55	60
10	Ser Cys Leu Pro Ala Phe Lys Asp Leu Ile Ala Lys Val Gln Ala Asp		
	65	70	75
	Glu Gln Phe Gly Ile Trp Leu Asp Ser Ser Ser Pro Glu Gln Thr Val		
	85	90	95
15	Pro Tyr Leu Trp Ser Glu Glu Thr Pro Ala Thr Pro Ile Gly Gln Ala		
	100	105	110
	Ile His Arg Leu Leu Leu Ile Gln Ala Phe Arg Pro Asp Arg Leu Leu		
	115	120	125
20	Ala Met Ala His Met Phe Val Ser Thr Asn Leu Gly Glu Ser Phe Met		
	130	135	140
	Ser Ile Met Glu Gln Pro Leu Asp Leu Thr His Ile Val Xaa Thr Glu		
	145	150	155
25	Val Lys Pro Asn Thr Pro Val Leu Met Cys Ser Val Pro Gly Tyr Asp		
	165	170	175
30	Ala Ser Gly His Val Glu Asp Leu Ala Ala Glu Gln Asn Thr Gln Ile		
	180	185	190
	Thr Ser Ile Ala Ile Gly Ser Ala Glu Gly Phe Asn Gln Ala Asp Lys		
	195	200	205
35	Ala Ile Asn Thr Ala Val Lys Ser Gly Arg Trp Val Met Leu Lys Asn		
	210	215	220
	Val His Leu Ala Pro Gly Trp Leu Met Gln Leu Glu Lys Lys Leu His		
	225	230	235
40	Ser Leu Gln Pro His Ala Cys Phe Arg Leu Phe Leu Thr Met Glu Ile		
	245	250	255
45	Asn Pro Lys Val Pro Val Asn Leu Leu Arg Ala Gly Arg Ile Phe Val		
	260	265	270
	Phe Glu Pro Pro Pro Gly Xaa Lys Ala Asn Met Leu Arg Thr Phe Ser		
	275	280	285
50	Ser Ile Pro Val Ser Arg Ile Cys Lys Ser Pro Asn Glu Arg Ala Arg		
	290	295	300
	Leu Tyr Phe Leu Leu Ala Trp Phe His Ala Ile Ile Gln Glu Arg Leu		
	305	310	315
55	Arg Tyr Ala Pro Leu Gly Trp Ser Lys Lys Tyr Glu Phe Gly Glu Ser		
	325	330	335
60	Asp Leu Arg Ser Xaa Cys Asp Thr Val Asp Thr Trp Leu Asp Asp Thr		

340 345 350
 Ala Lys Gly Arg Gln Asn Ile Ser Pro Asp Lys Ile Pro Trp Ser Ala
 355 360 365
 5 Leu Lys Thr Leu Met Ala Gln Ser Ile Tyr Gly Gly Arg Val Asp Asn
 370 375 380
 10 Glu Phe Asp Gln Arg Leu Leu Asn Thr Phe Leu Glu Arg Leu Phe Thr
 385 390 395 400
 Thr Arg Ser Phe Asp Ser Glu Phe Lys Leu Ala Cys Lys Val Asp Gly
 405 410 415
 15 His Lys Asp Ile Gln Met Pro Asp Gly Met Gln Ala Arg Gly Val Cys
 420 425 430
 Ala Val Gly Gly Val Ala Pro Arg His Pro Asp Ala Leu Leu Ala Gly
 435 440 445
 20 Pro Ala Gln Gln Arg Arg Glu Ser Pro Pro Tyr His Thr Gly Cys Gly
 450 455 460
 25 His Asp Gln
 465

- 30 (2) INFORMATION FOR SEQ ID NO: 366:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 152 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 366:

Met Ala Asp Glu Ala Thr Arg Arg Val Val Ser Glu Ile Pro Val Leu
 1 5 10 15
 40 Lys Thr Asn Ala Gly Pro Arg Asp Arg Glu Leu Trp Val Gln Arg Leu
 20 25 30
 Lys Glu Glu Tyr Gln Ser Leu Ile Arg Tyr Val Glu Asn Asn Lys Asn
 35 40 45
 45 Ala Asp Asn Asp Trp Phe Arg Leu Glu Ser Asn Lys Glu Gly Thr Arg
 50 55 60
 Trp Phe Gly Lys Cys Trp Tyr Ile His Asp Leu Leu Lys Tyr Glu Phe
 65 70 75 80
 Asp Ile Glu Phe Asp Ile Pro Ile Thr Tyr Pro Thr Thr Ala Pro Glu
 85 90 95
 55 Ile Ala Val Pro Glu Leu Asp Gly Lys Thr Ala Lys Met Tyr Arg Gly
 100 105 110
 Gly Lys Ile Cys Leu Thr Asp His Phe Lys Pro Leu Trp Gly Gln Glu
 115 120 125
 60

Cys Ala Gln Ile Trp Thr Ser Ser Ser His Gly Ser Gly Ala Gly Ser
130 135 140

5 Met Xaa Gly Ser Gly Asn Pro Xaa
145 150

10 (2) INFORMATION FOR SEQ ID NO: 367:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 373 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

15 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 367:

Met Tyr Asp Gly Thr Lys Glu Val Pro Met Asn Pro Val Lys Ile Tyr
1 5 10 15

20 Gln Val Cys Asp Ile Pro Gln Pro Gln Gly Ser Ile Ile Asn Pro Gly
20 25 30

Ser Thr Gly Ser Ala Pro Trp Asp Glu Lys Asp Asn Asp Val Asp Glu
35 40 45

25 Glu Asp Glu Glu Asp Glu Leu Asp Gln Ser Gln His His Val Pro Ile
50 55 60

30 Gln Asp Thr Phe Pro Phe Leu Asn Ile Asn Gly Ser Pro Met Ala Pro
65 70 75 80

Ala Ser Val Gly Asn Cys Ser Val Gly Asn Cys Ser Pro Glu Ala Val
85 90 95

35 Trp Pro Lys Thr Glu Pro Leu Glu Met Glu Val Pro Gln Ala Pro Ile
100 105 110

Gln Pro Phe Tyr Ser Ser Pro Glu Leu Trp Ile Ser Ser Leu Pro Met
115 120 125

40 Thr Asp Leu Asp Ile Lys Phe Gln Tyr Arg Gly Lys Glu Tyr Gly Gln
130 135 140

45 Thr Met Thr Val Ser Asn Pro Gln Gly Cys Arg Leu Phe Tyr Gly Asp
145 150 155 160

Leu Gly Pro Met Pro Asp Gln Glu Glu Leu Phe Gly Pro Val Xaa Leu
165 170 175

50 Glu Gln Val Lys Phe Pro Gly Pro Glu His Ile Thr Asn Glu Lys Gln
180 185 190

Lys Leu Phe Thr Ser Lys Leu Leu Asp Val Met Asp Arg Gly Leu Ile
195 200 205

55 Leu Glu Val Ser Gly His Ala Ile Tyr Ala Ile Arg Leu Cys Gln Cys
210 215 220

60 Lys Val Tyr Trp Ser Gly Pro Cys Ala Pro Ser Leu Val Ala Pro Asn
225 230 235 240

Leu Ile Glu Arg Gln Lys Lys Val Lys Leu Phe Cys Leu Glu Thr Phe
 245 250 255
 5 Leu Ser Asp Leu Ile Ala His Gln Lys Gly Gln Ile Glu Lys Gln Pro
 260 265 270
 Pro Phe Glu Ile Tyr Leu Cys Phe Gly Glu Glu Trp Pro Asp Gly Lys
 275 280 285
 10 Pro Leu Glu Arg Lys Leu Ile Leu Val Gln Val Ile Pro Val Val Ala
 290 295 300
 Arg Met Ile Tyr Glu Met Phe Ser Gly Asp Phe Thr Arg Ser Phe Asp
 15 305 310 315 320
 Ser Gly Ser Val Arg Leu Gln Ile Ser Thr Pro Asp Ile Lys Asp Asn
 325 330 335
 20 Ile Val Ala Gln Leu Lys Gln Leu Tyr Arg Ile Leu Gln Thr Gln Glu
 340 345 350
 Ser Trp Gln Pro Met Gln Pro Thr Pro Ser Met Gln Leu Pro Pro Ala
 355 360 365
 25 Leu Pro Pro Gln Xaa
 370

30

(2) INFORMATION FOR SEQ ID NO: 368:

(i) SEQUENCE CHARACTERISTICS:

35 (A) LENGTH: 83 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 368:

40 Met Gly Ser Ser Val Leu Pro Phe Cys Val Cys Val Thr Ser Pro Ser
 1 5 10 15
 Leu Gly Gly Arg Cys Ile Gln Gly Arg Phe Ala Ser His Ser Lys Phe
 20 25 30
 45 Trp Gly Phe Gly Arg Lys Thr Ala Ser Phe Gly Ala Val Gly Glu Thr
 35 40 45
 Pro Pro Asp Gln Glu Pro Gln Lys Glu Thr Glu Pro Ala Thr Ser Ser
 50 55 60
 55 His Ala Arg Pro Trp Ala Arg Val Ile Gly Leu Arg Ile Trp Pro Gln
 65 70 75 80
 Pro Asn Xaa

55

(2) INFORMATION FOR SEQ ID NO: 369:

60

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 369:

Met Leu Leu Ser Val Ala Ile Phe Ile Leu Leu Thr Leu Val Tyr Ala
 1 5 10 15

10 Tyr Trp Thr Met Xaa
 20

15 (2) INFORMATION FOR SEQ ID NO: 370:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 227 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 370:

Met Gly Ala Ser Ala Arg Leu Leu Arg Ala Val Ile Met Gly Ala Pro
 1 5 10 15

25 Gly Ser Gly Lys Gly Thr Val Ser Ser Arg Ile Thr Thr His Phe Glu
 20 25 30

30 Leu Lys His Leu Ser Ser Gly Asp Leu Leu Arg Asp Asn Met Leu Arg
 35 40 45

Gly Thr Glu Ile Gly Val Leu Ala Lys Ala Phe Ile Asp Gln Gly Lys
 50 55 60

35 Leu Ile Pro Asp Asp Val Met Thr Arg Leu Ala Leu His Glu Leu Lys
 65 70 75 80

Asn Leu Thr Gln Tyr Ser Trp Leu Leu Asp Gly Phe Pro Arg Thr Leu
 85 90 95

40 Pro Gln Ala Glu Ala Leu Asp Arg Ala Tyr Gln Ile Asp Thr Val Ile
 100 105 110

45 Asn Leu Asn Val Pro Phe Glu Val Ile Lys Gln Arg Leu Thr Ala Arg
 115 120 125

Trp Ile His Pro Ala Ser Gly Arg Val Tyr Asn Ile Glu Phe Asn Pro
 130 135 140

50 Pro Lys Thr Val Gly Ile Asp Asp Leu Thr Gly Glu Pro Leu Ile Gln
 145 150 155 160

Arg Glu Asp Asp Lys Pro Glu Thr Val Ile Lys Arg Leu Lys Ala Tyr
 165 170 175

55 Glu Asp Gln Thr Lys Pro Val Leu Glu Tyr Tyr Gln Lys Lys Gly Val
 180 185 190

60 Leu Glu Thr Phe Ser Gly Thr Glu Thr Asn Lys Ile Trp Pro Tyr Val
 195 200 205

Tyr Ala Phe Leu Gln Thr Lys Val Pro Gln Arg Ser Gln Lys Ala Ser
 210 215 220

5 Val Thr Pro
 225

10 (2) INFORMATION FOR SEQ ID NO: 371:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 79 amino acids

(B) TYPE: amino acid

15 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 371:

Met Phe Leu Asn Cys Glu Ile Leu Glu Tyr Cys Tyr Tyr Leu Thr Gln
 1 5 10 15
 20 Leu Lys Ile Ser Met Gly Lys Tyr Leu Ser Ile Pro Thr Val Leu Leu
 20 25 30
 Lys Ile Ile Arg Cys Ser Ile Thr Ala Val Ser Asp Ser Ser Thr Ser
 25 35 40 45
 Trp Ala Ile Lys Ala Gln Leu Lys Ile Glu Asn Lys Asp Leu Asp Asn
 50 55 60
 30 Lys Thr Ala Lys Gly Gly Gly Gln Glu Ala Leu Thr Cys Thr Xaa
 65 70 75

35 (2) INFORMATION FOR SEQ ID NO: 372:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 51 amino acids

(B) TYPE: amino acid

40 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 372:

Met Arg Ala Val Phe Pro Cys Cys Pro Phe Leu Thr Leu Met Leu Pro
 1 5 10 15
 45 Leu Leu Glu Cys Leu Val Gly Met Ile Met Cys Tyr Leu Gly Ile Ser
 20 25 30
 Phe Thr Asp Thr Arg Lys Thr Ala Gly Leu Lys Lys Lys Lys Lys Lys
 50 35 40 45
 Lys Xaa Xaa
 50

55

(2) INFORMATION FOR SEQ ID NO: 373:

(i) SEQUENCE CHARACTERISTICS:

60 (A) LENGTH: 61 amino acids

577

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 373:

5 Met Phe Leu Met Arg Met His Leu Cys Phe Cys Lys Tyr Cys Cys Ser
 1 5 10 15
 Phe Ile Val Thr Pro Thr Ser Thr Ser Asn Thr Ala Ser Tyr Leu Trp
 20 25 30
 10 Pro Trp Ile Ser Ala Ser Met Ala Gly Arg Gly Ser Ser Trp Ala Cys
 35 40 45
 Thr Leu Asn Ala Val Thr Arg Glu Gly Leu Pro Glu Xaa
 15 50 55 60

(2) INFORMATION FOR SEQ ID NO: 374:

20

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 40 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 374:

Met Ser Leu Leu Asn Thr His Thr Leu Cys Phe Val Leu Phe Cys Phe
 1 5 10 15
 30 Thr Leu Ser Ile Asn Gln Glu Lys Leu Ala Asn His Leu Ala Phe Arg
 20 25 30
 Ile Leu Phe Phe Ile Val Phe Xaa
 35 40
 35

(2) INFORMATION FOR SEQ ID NO: 375:

40

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 44 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 375:

Met Cys Ser Gly Gln Ser Gln Val Trp Lys Met Ala Leu Gln Ala Leu
 1 5 10 15
 50 Asp Ser Glu Thr Val Val Ile Leu Pro Asp Met His Leu Ile Leu Ser
 20 25 30
 Leu Arg Leu Ile His Asn Ala Arg Pro Cys Leu Xaa
 35 40

55

(2) INFORMATION FOR SEQ ID NO: 376:

60

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 203 amino acids

578

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 376:

5 Met Leu Ile Ser Glu Glu Glu Ile Pro Phe Lys Asp Asp Pro Arg Asp
1 5 10 15

Glu Thr Tyr Lys Pro His Leu Glu Arg Glu Thr Pro Lys Pro Arg Arg
20 25 30

10 Lys Ser Gly Lys Val Lys Glu Glu Lys Glu Lys Lys Glu Ile Lys Val
35 40 45

Glu Val Glu Val Glu Val Lys Glu Glu Glu Asn Glu Ile Arg Glu Asp
15 50 55 60

Glu Glu Pro Pro Arg Lys Arg Gly Arg Arg Arg Lys Asp Asp Lys Ser
65 70 75 80

20 Pro Arg Leu Pro Lys Arg Arg Lys Lys Pro Pro Ile Gln Tyr Val Arg
85 90 95

Cys Glu Met Glu Gly Cys Gly Thr Val Leu Ala His Pro Arg Tyr Leu
100 105 110

25 Gln His His Ile Lys Tyr Gln His Leu Leu Lys Lys Lys Tyr Val Cys
115 120 125

Pro His Pro Ser Cys Gly Arg Leu Phe Arg Leu Gln Lys Gln Leu Leu
30 130 135 140

Arg His Ala Lys His His Thr Asp Gln Arg Asp Tyr Ile Cys Glu Tyr
145 150 155 160

35 Cys Ala Arg Ala Phe Lys Ser Ser His Asn Leu Ala Val His Arg Met
165 170 175

Ile His Thr Gly Glu Lys His Tyr Asn Val Arg Ser Val Asp Leu Leu
180 185 190

40 Val Asp Lys Arg His Leu Leu Ile Gly Thr Xaa
195 200

45

(2) INFORMATION FOR SEQ ID NO: 377:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 29 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 377:

50 Met Leu Pro Arg Arg Thr Phe Tyr Phe Tyr Phe Ile Phe Ile Phe Phe
1 5 10 15

Leu Ala Ser Phe Trp Gly Phe Thr Leu Arg Ala Ser Phe
20 25

60

(2) INFORMATION FOR SEQ ID NO: 378:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 136 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 378:

5 Met Phe Asp Ser Leu Ser Tyr Phe Lys Gly Ser Ser Leu Leu Leu Met
 1 5 10 15
 Leu Lys Thr Tyr Leu Ser Glu Asp Val Phe Gln His Ala Val Val Leu
 20 25 30
 15 Tyr Leu His Asn His Ser Tyr Ala Ser Ile Gln Ser Asp Asp Leu Trp
 35 40 45
 Asp Ser Phe Asn Glu Val Thr Asn Gln Thr Leu Asp Val Lys Arg Met
 20 50 55 60
 Met Lys Thr Trp Thr Leu Gln Lys Gly Phe Pro Leu Val Thr Val Gln
 65 70 75 80
 25 Lys Lys Gly Lys Glu Leu Phe Ile Gln Gln Glu Arg Phe Phe Leu Asn
 85 90 95
 Met Lys Pro Glu Ile Gln Pro Ser Asp Thr Arg Tyr Met Pro Ser Phe
 100 105 110
 30 Phe Ser Cys His Leu Phe Cys Thr Leu Arg Trp Lys Tyr Phe Glu Val
 115 120 125
 Phe Tyr Asn His Lys Phe Leu Xaa
 35 130 135

(2) INFORMATION FOR SEQ ID NO: 379:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 41 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 379:

40 Met Ala Trp Arg Arg Arg Glu Pro Ala Ser Gly Leu Ala Ala Cys Trp
 1 5 10 15
 50 Leu Trp Arg Cys Ser Pro Trp Pro Cys Ala Cys Pro Gly Pro Gly Ala
 20 25 30
 Gly Leu Ser Ser Gly Ser Arg Pro Trp
 35 40
 55

(2) INFORMATION FOR SEQ ID NO: 380:

(i) SEQUENCE CHARACTERISTICS:

60

580

(A) LENGTH: 468 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 380:

5 Met Glu Phe Leu Lys Val Ala Arg Arg Asn Lys Arg Glu Gln Leu Glu
 1 5 10 15
 10 Gln Ile Gln Lys Glu Leu Ser Val Leu Glu Glu Asp Ile Lys Arg Val
 20 25 30
 Glu Glu Met Ser Gly Leu Tyr Ser Pro Val Ser Glu Asp Ser Thr Val
 35 40 45
 15 Pro Gln Phe Glu Ala Pro Ser Pro Ser His Ser Ser Ile Ile Asp Ser
 50 55 60
 Thr Glu Tyr Ser Gln Pro Pro Gly Phe Ser Gly Ser Ser Gln Thr Lys
 65 70 75 80
 20 Lys Gln Pro Trp Tyr Asn Ser Thr Leu Ala Ser Arg Arg Lys Arg Leu
 85 90 95
 Thr Ala His Phe Glu Asp Leu Glu Gln Cys Tyr Phe Ser Thr Arg Met
 100 105 110
 25 Ser Arg Ile Ser Asp Asp Ser Arg Thr Ala Ser Gln Leu Asp Glu Phe
 115 120 125
 30 Gln Glu Cys Leu Ser Lys Phe Thr Arg Tyr Asn Ser Val Arg Pro Leu
 130 135 140
 Ala Thr Leu Ser Tyr Ala Ser Asp Leu Tyr Asn Gly Ser Ser Ile Val
 145 150 155 160
 35 Ser Ser Ile Glu Phe Asp Arg Asp Cys Asp Tyr Phe Ala Ile Ala Gly
 165 170 175
 Val Thr Lys Lys Ile Lys Val Tyr Glu Tyr Asp Thr Val Ile Gln Asp
 180 185 190
 40 Ala Val Asp Ile His Tyr Pro Glu Asn Glu Met Thr Cys Asn Ser Lys
 195 200 205
 45 Ile Ser Cys Ile Ser Trp Ser Ser Tyr His Lys Asn Leu Leu Ala Ser
 210 215 220
 Ser Asp Tyr Glu Gly Thr Val Ile Leu Trp Asp Gly Phe Thr Gly Gln
 225 230 235 240
 50 Arg Ser Lys Val Tyr Gln Glu His Glu Lys Arg Cys Trp Ser Val Asp
 245 250 255
 Phe Asn Leu Met Asp Pro Lys Leu Leu Ala Ser Gly Ser Asp Asp Ala
 260 265 270
 55 Lys Val Lys Leu Trp Ser Thr Asn Leu Asp Asn Ser Val Ala Ser Ile
 275 280 285
 60 Glu Ala Lys Ala Asn Val Cys Cys Val Lys Phe Ser Pro Ser Ser Arg

581

290 295 300
 Tyr His Leu Ala Phe Gly Cys Ala Asp His Cys Val His Tyr Tyr Asp
 305 310 315 320
 5 Leu Arg Asn Thr Lys Gln Pro Ile Met Val Phe Lys Gly His Arg Lys
 325 330 335
 Ala Val Ser Tyr Ala Lys Phe Val Ser Gly Glu Glu Ile Val Ser Ala
 10 340 345 350
 Ser Thr Asp Ser Gln Leu Lys Leu Trp Asn Val Gly Lys Pro Tyr Cys
 355 360 365
 15 Leu Arg Ser Phe Lys Gly His Ile Asn Glu Lys Asn Phe Val Gly Leu
 370 375 380
 Ala Ser Asn Gly Asp Tyr Ile Ala Cys Gly Ser Glu Asn Asn Ser Leu
 20 385 390 395 400
 Tyr Leu Tyr Tyr Lys Gly Leu Ser Lys Thr Leu Leu Thr Phe Lys Phe
 405 410 415
 Asp Thr Val Lys Ser Val Leu Asp Lys Asp Arg Lys Glu Asp Asp Thr
 25 420 425 430
 Asn Glu Phe Val Ser Ala Val Cys Trp Arg Ala Leu Pro Asp Gly Glu
 435 440 445
 30 Ser Asn Val Leu Ile Ala Ala Asn Ser Gln Gly Thr Ile Lys Val Leu
 450 455 460
 Glu Leu Val Xaa
 35 465

(2) INFORMATION FOR SEQ ID NO: 381:

40 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 29 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 381:
 Met Arg Lys Glu Asp Gly Phe Trp Phe Phe Phe Leu Phe Phe Phe
 1 5 10 15
 Val Val Gly Ser Lys Phe Val Asn Gly Asn Lys Leu Val
 50 20 25

(2) INFORMATION FOR SEQ ID NO: 382:

55 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 29 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 60 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 382:

Met Pro Leu Ala Pro Tyr Cys Asp Leu Leu Val Ala Leu Ser Phe Ala
 1 5 10 15

5 Leu Val Leu Glu Ser Pro Val Asp Ser Ser Asp Phe Thr
 20 25

10 (2) INFORMATION FOR SEQ ID NO: 383:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 138 amino acids

(B) TYPE: amino acid

15 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 383:

Met Asn Ser Leu Val Ser Trp Gln Leu Leu Leu Phe Leu Cys Ala Thr
 1 5 10 15

20 His Phe Gly Glu Pro Leu Glu Lys Val Ala Ser Val Gly Asn Ser Arg
 20 25 30

25 Pro Thr Gly Gln Gln Leu Glu Ser Leu Gly Leu Leu Ala Pro Gly Glu
 35 40 45

Gln Ser Leu Pro Cys Thr Glu Arg Lys Pro Ala Ala Thr Ala Arg Leu
 50 55 60

30 Ser Arg Arg Gly Thr Ser Leu Ser Pro Pro Pro Glu Ser Ser Gly Ser
 65 70 75 80

Pro Gln Gln Pro Gly Leu Ser Ala Pro His Ser Arg Gln Ile Pro Ala
 85 90 95

35 Pro Gln Gly Ala Val Leu Val Gln Arg Glu Lys Asp Leu Pro Asn Tyr
 100 105 110

40 Asn Trp Asn Ser Phe Gly Leu Arg Phe Gly Lys Arg Glu Ala Ala Pro
 115 120 125

Gly Asn His Gly Arg Ser Ala Gly Arg Gly
 130 135

45

(2) INFORMATION FOR SEQ ID NO: 384:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 74 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 384:

55 Met Ser Cys Phe Ile Asp Ser Xaa Asp Ser Lys Ile Leu His Leu Leu
 1 5 10 15

Val Val Ser Phe Ile Cys Xaa Leu Phe Leu Leu Ile Leu Thr His Gly
 20 25 30

60

Ile Leu Ile Leu Arg Xaa Phe Phe Ser Val Xaa Xaa His Ser Leu Lys
 35 40 45
 - 5 Asn Asn Leu Glu Glu Tyr Leu Ile Leu Met Asn Lys Ala Leu Leu Thr
 50 55 60
 Arg Glu Asp Phe Phe Val Leu Pro Xaa Ala
 65 70

10

(2) INFORMATION FOR SEQ ID NO: 385:

15 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 521 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 385:

20 Met Ser Ala Gly Glu Val Glu Arg Leu Val Ser Glu Leu Ser Gly Gly
 1 5 10 15
 Thr Gly Gly Asp Glu Glu Glu Glu Trp Leu Tyr Gly Asp Glu Asn Glu
 20 25 30
 25 Val Glu Arg Pro Glu Glu Glu Asn Ala Ser Ala Asn Pro Pro Ser Gly
 35 40 45
 30 Ile Glu Asp Glu Thr Ala Glu Asn Gly Val Pro Lys Pro Lys Val Thr
 50 55 60
 Glu Thr Glu Asp Asp Ser Asp Ser Asp Ser Asp Asp Asp Glu Asp Asp
 65 70 75 80
 35 Val His Val Thr Ile Gly Asp Ile Lys Thr Gly Ala Pro Gln Tyr Gly
 85 90 95
 Ser Tyr Gly Thr Ala Pro Val Asn Leu Asn Ile Lys Thr Gly Gly Arg
 100 105 110
 40 Val Tyr Gly Thr Thr Gly Thr Lys Val Lys Gly Val Asp Leu Asp Ala
 115 120 125
 Pro Gly Ser Ile Asn Gly Val Pro Leu Leu Glu Val Asp Leu Asp Ser
 45 130 135 140
 Phe Glu Asp Lys Pro Trp Arg Lys Pro Gly Ala Asp Leu Ser Asp Tyr
 145 150 155 160
 50 Phe Asn Tyr Gly Phe Asn Glu Asp Thr Trp Lys Ala Tyr Cys Glu Lys
 165 170 175
 Gln Lys Arg Ile Arg Met Gly Leu Glu Val Ile Pro Val Thr Ser Thr
 180 185 190
 55 Thr Asn Lys Ile Thr Val Gln Gln Gly Arg Thr Gly Asn Ser Glu Lys
 195 200 205
 60 Glu Thr Ala Leu Pro Ser Thr Lys Ala Glu Phe Thr Ser Pro Pro Ser
 210 215 220

Leu Phe Lys Thr Gly Leu Pro Pro Ser Arg Arg Leu Pro Gly Ala Ile
 225 230 235 240
 5 Asp Val Ile Gly Gln Thr Ile Thr Ile Ser Arg Val Glu Gly Arg Arg
 245 250 255
 Arg Ala Asn Glu Asn Ser Asn Ile Gln Val Leu Ser Glu Arg Ser Ala
 260 265 270
 10 Thr Glu Val Asp Asn Asn Phe Ser Lys Pro Pro Pro Phe Phe Pro Pro
 275 280 285
 Gly Ala Pro Pro Thr His Leu Pro Pro Pro Pro Phe Leu Pro Pro Pro
 15 290 295 300
 Pro Thr Val Ser Thr Ala Pro Pro Leu Ile Pro Pro Pro Gly Phe Pro
 305 310 315 320
 20 Pro Pro Pro Gly Ala Pro Pro Pro Ser Leu Ile Pro Thr Ile Glu Ser
 325 330 335
 Gly His Ser Ser Gly Tyr Asp Ser Arg Ser Ala Arg Ala Phe Pro Tyr
 340 345 350
 25 Gly Asn Val Ala Phe Pro His Leu Pro Gly Ser Ala Pro Ser Trp Pro
 355 360 365
 Ser Leu Val Asp Thr Ser Lys Gln Trp Asp Tyr Tyr Ala Arg Arg Glu
 30 370 375 380
 Lys Asp Arg Asp Arg Glu Arg Asp Arg Asp Arg Glu Arg Asp Arg Asp
 385 390 395 400
 35 Arg Asp Arg Glu Arg Glu Arg Thr Arg Glu Arg Glu Arg Glu Arg Asp
 405 410 415
 His Ser Pro Thr Pro Ser Val Phe Asn Ser Asp Glu Glu Arg Tyr Arg
 420 425 430
 40 Tyr Arg Glu Tyr Ala Glu Arg Gly Tyr Glu Arg His Arg Ala Ser Arg
 435 440 445
 Glu Lys Glu Glu Arg His Arg Glu Arg Arg His Arg Glu Lys Glu Glu
 45 450 455 460
 Thr Arg His Lys Ser Ser Arg Ser Asn Ser Arg Arg Arg His Glu Ser
 465 470 475 480
 50 Glu Glu Gly Asp Ser His Arg Arg His Lys His Lys Lys Ser Lys Arg
 485 490 495
 Ser Lys Glu Gly Lys Glu Ala Gly Ser Glu Pro Ala Pro Glu Gln Glu
 500 505 510
 55 Ser Thr Glu Ala Thr Pro Ala Glu Xaa
 515 520
 60

585

(2) INFORMATION FOR SEQ ID NO: 386:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 137 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 386:

5 Met Asn Ser Arg Gly Ile Trp Leu Ala Tyr Ile Ile Leu Val Gly Leu
 10 1 5 10 15
 Leu His Met Val Leu Leu Ser Ile Pro Phe Phe Ser Ile Pro Val Val
 20 20 25 30
 15 Trp Thr Leu Thr Asn Val Ile His Asn Leu Ala Thr Tyr Val Phe Leu
 35 40 45
 His Thr Val Lys Gly Thr Pro Phe Glu Thr Pro Asp Gln Gly Lys Ala
 50 55 60
 20 Arg Leu Leu Thr His Trp Glu Gln Met Asp Tyr Gly Leu Gln Phe Thr
 65 70 75 80
 25 Ser Ser Arg Lys Phe Leu Ser Ile Ser Pro Ile Val Leu Tyr Leu Leu
 85 90 95
 Ala Ser Phe Tyr Thr Lys Tyr Asp Ala Ala His Phe Leu Ile Asn Thr
 100 105 110
 30 Ala Ser Leu Leu Ser Val Leu Leu Pro Lys Leu Pro Gln Phe His Gly
 115 120 125
 Val Arg Val Phe Gly Ile Asn Lys Tyr
 130 135
 35

(2) INFORMATION FOR SEQ ID NO: 387:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 186 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 387:

40 Met Ala Ala Gln Lys Asp Gln Gln Lys Asp Ala Glu Ala Glu Gly Leu
 5 10 15
 50 Ser Gly Thr Thr Leu Leu Pro Lys Leu Ile Pro Ser Gly Ala Gly Arg
 20 25 30
 Glu Trp Leu Glu Arg Arg Arg Ala Thr Ile Arg Pro Trp Ser Thr Phe
 35 40 45
 55 Val Asp Gln Gln Arg Phe Ser Arg Pro Arg Asn Leu Gly Glu Leu Cys
 50 55 60
 Gln Arg Leu Val Arg Asn Val Glu Tyr Tyr Gln Ser Asn Tyr Val Phe
 65 70 75 80
 60

586

Val Phe Leu Gly Leu Ile Leu Tyr Cys Val Val Thr Ser Pro Met Leu
 85 90 95

Leu Val Ala Leu Ala Val Phe Phe Gly Ala Cys Tyr Ile Leu Tyr Leu
 - 5 100 105 110

Arg Thr Leu Glu Ser Lys Leu Val Leu Phe Gly Arg Glu Val Ser Pro
 115 120 125

10 Ala His Gln Tyr Ala Leu Ala Gly Gly Ile Ser Phe Pro Phe Phe Trp
 130 135 140

Leu Ala Gly Ala Gly Ser Ala Val Phe Trp Val Leu Gly Ala Thr Leu
 145 150 155 160

15 Val Val Ile Gly Ser His Ala Ala Phe His Gln Ile Glu Ala Val Asp
 165 170 175

Gly Glu Glu Leu Gln Met Glu Pro Val Xaa
 20 180 185

(2) INFORMATION FOR SEQ ID NO: 388:

25

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 388:

Met

1

35

(2) INFORMATION FOR SEQ ID NO: 389:

(i) SEQUENCE CHARACTERISTICS:

40

(A) LENGTH: 299 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 389:

45

Met Leu Ser Ile Phe Tyr Phe Ala Ile Pro Val Gly Ser Gly Leu Gly
 1 5 10 15

Tyr Ile Ala Gly Ser Lys Val Lys Asp Met Ala Gly Asp Trp His Trp
 20 25 30

50

Ala Leu Arg Val Thr Pro Gly Leu Gly Val Val Ala Val Leu Leu Leu
 35 40 45

55

Phe Leu Val Val Arg Glu Pro Pro Arg Gly Ala Val Glu Arg His Ser
 50 55 60

Asp Leu Pro Pro Leu Asn Pro Thr Ser Trp Trp Ala Asp Leu Arg Ala
 65 70 75 80

60

Leu Ala Arg Asn Pro Ser Phe Val Leu Ser Ser Leu Gly Phe Thr Ala

	85	90	95
	Val Ala Phe Val Thr Gly Ser Leu Ala Leu Trp Ala Pro Ala Phe Leu		
	100	105	110
5	Leu Arg Ser Arg Val Val Leu Gly Glu Thr Pro Pro Cys Leu Pro Gly		
	115	120	125
10	Asp Ser Cys Ser Ser Ser Asp Ser Leu Ile Phe Gly Leu Ile Thr Cys		
	130	135	140
	Leu Thr Gly Val Leu Gly Val Gly Leu Gly Val Glu Ile Ser Arg Arg		
	145	150	155
15	Leu Arg His Ser Asn Pro Arg Ala Asp Pro Leu Val Cys Ala Thr Gly		
	165	170	175
	Leu Leu Gly Ser Ala Pro Phe Leu Phe Leu Ser Leu Ala Cys Ala Arg		
	180	185	190
20	Gly Ser Ile Val Ala Thr Tyr Ile Phe Ile Phe Ile Gly Glu Thr Leu		
	195	200	205
	Leu Ser Met Asn Trp Ala Ile Val Ala Asp Ile Leu Leu Tyr Val Val		
25	210	215	220
	Ile Pro Thr Arg Arg Ser Thr Ala Glu Ala Phe Gln Ile Val Leu Ser		
	225	230	235
30	His Leu Leu Gly Asp Ala Gly Ser Pro Tyr Leu Ile Gly Leu Ile Ser		
	245	250	255
	Asp Arg Leu Arg Arg Asn Trp Pro Pro Ser Phe Leu Ser Glu Phe Arg		
	260	265	270
35	Ala Leu Gln Phe Ser Leu Met Leu Cys Ala Phe Val Gly Ala Leu Gly		
	275	280	285
	Gly Ala Leu Pro Gly His Arg His Leu His Xaa		
40	290	295	

(2) INFORMATION FOR SEQ ID NO: 390:

45

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 49 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

50

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 390:

	Met Gly Pro Gln Gly Trp Val Arg Pro Leu Lys Thr Ala Pro Lys Leu
	1 5 10 15
55	Gly Glu Ala Ile Arg Leu Ile Leu Phe Leu Asn Phe Val Lys Gln Cys
	20 25 30
	Ile Ala Ser Val Asn Leu Cys Ile Leu Arg Leu Asn Ile Thr Pro Leu
60	35 40 45

Leu

- 5

(2) INFORMATION FOR SEQ ID NO: 391:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 61 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 391:

15 Met Tyr Val Asn Tyr Gly Thr Arg Asn Tyr Ser Thr Glu Gly Pro Ala
 1 5 10 15

Ala Leu Leu Asp Gln Ala Lys Leu Ser Leu Leu Val Trp Val Leu Cys
 20 25 30

20 Phe Val Leu Leu Phe Val Cys Phe Cys Gly Leu Ser Tyr Val Val Ile
 35 40 45

Ala Gln Val Pro Val Gly Leu Leu Cys Ile Thr Glu Xaa
 50 55 60

25

(2) INFORMATION FOR SEQ ID NO: 392:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 79 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 392:

35

Met Leu Trp Phe Ala Asn Phe Phe Thr Tyr Leu Phe Leu Ser Gln Ser
 1 5 10 15

Val Ala Phe Val His Ile Ser His Ile Gly Val Arg Gln Val Asn Thr
 20 25 30

Asn Cys Tyr Phe Ser Arg Lys Ser Tyr Cys Tyr Gly Ile Leu Asn Pro
 35 40 45

45 Ile Asn Cys Ile Lys Gly Lys Lys Lys Lys Lys Lys Lys Lys Lys
 50 55 60

Lys Lys Lys Lys Ile Pro Ala Gly Arg Xaa Leu Phe Pro Phe Gly
 65 70 75

50

(2) INFORMATION FOR SEQ ID NO: 393:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 36 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 393:

55

60

Met Pro Gly Ala Phe Ser Glu Thr Val Ile Asn Asp Leu Leu Ser Leu
 1 5 10 15
 Phe Leu Val Leu Pro Ala Glu Leu Ser Tyr Ser Thr Leu Ser Gly Val
 5 20 25 30
 Tyr Arg Asn Ala
 35

10

(2) INFORMATION FOR SEQ ID NO: 394:

(i) SEQUENCE CHARACTERISTICS:
 15 (A) LENGTH: 180 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 394:

20 Met Ala Gln Ser Arg Asp Gly Gly Asn Pro Phe Ala Glu Pro Ser Glu
 1 5 10 15
 Leu Asp Asn Pro Phe Gln Asp Pro Ala Val Ile Gln His Arg Pro Ser
 20 25 30
 25 Arg Gln Tyr Ala Thr Leu Asp Val Tyr Asn Pro Phe Glu Thr Arg Glu
 35 40 45
 Pro Pro Pro Ala Tyr Glu Pro Pro Ala Pro Ala Pro Leu Pro Pro Pro
 30 50 55 60
 Ser Ala Pro Ser Leu Gln Pro Ser Arg Lys Leu Ser Pro Thr Glu Pro
 65 70 75 80
 35 Lys Asn Tyr Gly Ser Tyr Ser Thr Gln Ala Ser Ala Ala Ala Ala Thr
 85 90 95
 Ala Glu Leu Leu Lys Lys Gln Glu Glu Leu Asn Arg Lys Ala Glu Glu
 100 105 110
 40 Leu Asp Arg Arg Ser Glu Ser Cys Ser Met Leu Pro Trp Xaa Ala Gln
 115 120 125
 Leu Leu Asp Arg Thr Ile Gly Pro Leu Tyr Leu Leu Phe Val Gln Phe
 45 130 135 140
 Ser Pro Ala Phe Ser Arg Thr Ser Pro Trp Arg Ser Pro Lys Asn Phe
 145 150 155 160
 50 Arg Arg Leu Tyr Pro Pro Cys Thr Thr Ser Gly Cys Ala Ala Arg Trp
 165 170 175
 Xaa Phe Ser Xaa
 180

55

(2) INFORMATION FOR SEQ ID NO: 395:

60 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 395:

- 5

Met Pro Thr Pro Cys Thr Ser Leu Pro Ser Cys Cys Gln His Arg Ser
 1 5 10 15

Ile Thr Met Thr Leu
 20

10

(2) INFORMATION FOR SEQ ID NO: 396:

15

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

20

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 396:

Met Pro Leu Phe Ile Pro Leu Ile Phe Phe Leu Ser Leu Leu His Cys
 1 5 10 15

Gln Ser Lys His Pro Ile Gln Met Ser Leu Cys Met Cys Val Asn Ile
 20 25 30

25

Ser Leu Val Trp Ser Pro Val Arg Trp Ile Phe Gly Ser Lys Gly Leu
 35 40 45

30

Phe Ser Val His Leu Gln Ser Ser Gln Arg Pro Ser
 50 55 60

35

(2) INFORMATION FOR SEQ ID NO: 397:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 152 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

40

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 397:

Met Ala Gly Pro Arg Pro Xaa Trp Arg Asp Gln Leu Leu Phe Met Ser
 1 5 10 15

45

Ile Ile Val Leu Val Ile Val Val Ile Cys Leu Met Leu Tyr Ala Leu
 20 25 30

Leu Trp Glu Ala Gly Asn Leu Thr Asp Leu Pro Asn Leu Arg Ile Gly
 35 40 45

50

Phe Tyr Asn Phe Cys Leu Trp Asn Glu Asp Thr Ser Thr Leu Gln Cys
 50 55 60

55

His Gln Phe Pro Glu Leu Glu Ala Leu Gly Val Pro Arg Val Gly Leu
 65 70 75 80

Gly Leu Ala Arg Leu Gly Val Tyr Gly Ser Leu Val Leu Thr Leu Phe
 85 90 95

60

Ala Pro Gln Pro Leu Leu Leu Ala Gln Cys Asn Xaa Asp Glu Arg Ala
100 105 110

5 Trp Arg Leu Ala Val Gly Phe Leu Ala Val Ser Ser Val Leu Leu Ala
115 120 125

Gly Gly Leu Gly Leu Phe Leu Ser Tyr Val Trp Asn Gly Ser Xaa Ser
130 135 140

10 Pro Ser Arg Gly Leu Gly Phe Xaa
145 150

15 (2) INFORMATION FOR SEQ ID NO: 398:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 480 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 398:

25 Met Ser Asp Gly Phe Asp Arg Ala Pro Gly Ala Gly Arg Gly Arg Xaa
1 5 10 15

Arg Gly Leu Gly Arg Gly Gly Gly Gly Pro Xaa Gly Gly Gly Phe Pro
20 25 30

30 Xaa Gly Xaa Xaa Pro Ala Glu Arg Xaa Arg His Gln Pro Pro Gln Pro
35 40 45

Lys Ala Pro Gly Phe Leu Gln Pro Xaa Pro Leu Arg Gln Pro Arg Thr
50 55 60

35 Thr Pro Pro Pro Gly Ala Gln Cys Glu Val Pro Ala Ser Pro Gln Arg
65 70 75 80

Pro Ser Arg Pro Gly Ala Leu Pro Glu Gln Thr Arg Pro Leu Arg Ala
40 85 90 95

Pro Pro Ser Ser Gln Asp Lys Ile Pro Gln Gln Asn Ser Glu Ser Ala
100 105 110

45 Met Ala Lys Pro Gln Val Val Val Ala Pro Val Leu Met Ser Lys Leu
115 120 125

Ser Val Asn Ala Pro Glu Phe Tyr Pro Ser Gly Tyr Ser Ser Ser Tyr
130 135 140

50 Thr Glu Ser Tyr Glu Asp Gly Cys Glu Asp Tyr Pro Thr Leu Ser Glu
145 150 155 160

Tyr Val Gln Asp Phe Leu Asn His Leu Thr Glu Gln Pro Gly Ser Phe
55 165 170 175

Glu Thr Glu Ile Glu Gln Phe Ala Glu Thr Leu Asn Gly Cys Val Thr
180 185 190

60 Thr Asp Asp Ala Leu Gln Glu Leu Val Glu Leu Ile Tyr Gln Gln Ala

592

	195	200	205
	Thr Ser Ile Pro Asn Phe Ser Tyr Met Gly Ala Arg Leu Cys Asn Tyr		
	210	215	220
5	Leu Ser His His Leu Thr Ile Ser Pro Gln Ser Gly Asn Phe Arg Gln		
	225	230	235 240
10	Leu Leu Leu Gln Arg Cys Arg Thr Glu Tyr Glu Val Lys Asp Gln Ala		
	245	250	255
	Ala Lys Gly Asp Glu Val Thr Arg Lys Arg Phe His Ala Phe Val Leu		
	260	265	270
15	Phe Leu Gly Glu Leu Tyr Leu Asn Leu Glu Ile Lys Gly Thr Asn Gly		
	275	280	285
	Gln Val Thr Arg Ala Asp Ile Leu Gln Val Gly Leu Arg Glu Leu Leu		
	290	295	300
20	Asn Ala Leu Phe Ser Asn Pro Met Asp Asp Asn Leu Ile Cys Ala Val		
	305	310	315 320
	Lys Leu Leu Lys Leu Thr Gly Ser Val Leu Glu Asp Ala Trp Lys Glu		
	325	330	335
25	Lys Gly Lys Met Asp Met Glu Glu Ile Ile Gln Arg Ile Glu Asn Val		
	340	345	350
30	Val Leu Asp Ala Asn Cys Ser Arg Asp Val Lys Gln Met Leu Leu Lys		
	355	360	365
	Leu Val Glu Leu Arg Ser Ser Asn Trp Gly Arg Val His Ala Thr Ser		
	370	375	380
35	Thr Tyr Arg Glu Ala Thr Pro Glu Asn Asp Pro Asn Tyr Phe Met Asn		
	385	390	395 400
	Glu Pro Thr Phe Tyr Thr Ser Asp Gly Val Pro Phe Thr Ala Ala Asp		
	405	410	415
40	Pro Asp Tyr Gln Glu Lys Tyr Gln Glu Leu Leu Glu Arg Glu Asp Phe		
	420	425	430
45	Phe Pro Asp Tyr Glu Glu Asn Gly Thr Asp Leu Ser Gly Ala Gly Asp		
	435	440	445
	Pro Tyr Leu Asp Asp Ile Asp Asp Glu Met Asp Pro Glu Ile Glu Glu		
	450	455	460
50	Ala Tyr Glu Lys Phe Cys Leu Glu Ser Glu Arg Lys Arg Lys Gln Xaa		
	465	470	475 480

55

(2) INFORMATION FOR SEQ ID NO: 399:

60

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 423 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

- 5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 399:

	Met	Glu	Pro	Lys	Thr	Ile	Thr	Asp	Ala	Leu	Ala	Ser	Ser	Ile	Ile	Lys	
	1				5					10					15		
10	Ser	Val	Leu	Pro	Asn	Phe	Leu	Pro	Tyr	Asn	Val	Met	Leu	Tyr	Ser	Asp	
				20					25					30			
	Ala	Pro	Val	Ser	Glu	Leu	Ser	Leu	Glu	Leu	Leu	Leu	Gln	Val	Val		
				35				40					45				
15	Leu	Pro	Ala	Leu	Leu	Glu	Gln	Gly	His	Thr	Arg	Gln	Trp	Leu	Lys	Gly	
		50					55					60					
	Leu	Val	Arg	Ala	Trp	Thr	Val	Thr	Ala	Gly	Tyr	Leu	Leu	Asp	Leu	His	
20		65				70				75					80		
	Ser	Tyr	Leu	Leu	Gly	Asp	Gln	Glu	Glu	Asn	Glu	Asn	Ser	Ala	Asn	Gln	
					85					90					95		
25	Gln	Val	Asn	Asn	Asn	Gln	His	Ala	Arg	Asn	Asn	Asn	Ala	Ile	Pro	Val	
				100					105					110			
	Val	Gly	Glu	Gly	Leu	His	Ala	Ala	His	Gln	Ala	Ile	Leu	Gln	Gln	Gly	
		115					120					125					
30	Gly	Pro	Val	Gly	Phe	Gln	Xaa	Tyr	Arg	Arg	Pro	Leu	Asn	Phe	Pro	Leu	
		130				135						140					
	Arg	Ile	Phe	Leu	Leu	Ile	Val	Phe	Met	Cys	Ile	Thr	Leu	Leu	Ile	Ala	
35		145				150				155					160		
	Ser	Leu	Ile	Cys	Leu	Thr	Leu	Pro	Val	Phe	Ala	Gly	Arg	Trp	Leu	Met	
				165					170					175			
40	Ser	Phe	Trp	Thr	Gly	Thr	Ala	Lys	Ile	His	Glu	Leu	Tyr	Thr	Ala	Ala	
				180				185						190			
	Cys	Gly	Leu	Tyr	Val	Cys	Trp	Leu	Thr	Ile	Arg	Ala	Val	Thr	Val	Met	
		195					200					205					
45	Val	Ala	Trp	Met	Pro	Gln	Gly	Arg	Arg	Val	Ile	Phe	Gln	Lys	Val	Lys	
		210					215					220					
	Glu	Trp	Ser	Leu	Met	Ile	Met	Lys	Thr	Leu	Ile	Val	Ala	Val	Leu	Leu	
50		225				230				235					240		
	Ala	Gly	Val	Val	Pro	Leu	Leu	Leu	Gly	Leu	Leu	Phe	Glu	Leu	Val	Ile	
				245				250				255					
55	Val	Ala	Pro	Leu	Arg	Val	Pro	Leu	Asp	Gln	Thr	Pro	Leu	Phe	Tyr	Pro	
				260				265					270				
	Trp	Gln	Asp	Trp	Ala	Leu	Gly	Val	Leu	His	Ala	Lys	Ile	Ile	Ala	Ala	
60				275				280				285					

594

Ile Thr Leu Met Gly Pro Gln Trp Trp Leu Lys Thr Val Ile Glu Gln
 290 295 300

5 Val Tyr Ala Asn Gly Ile Arg Asn Ile Asp Leu His Tyr Ile Val Arg
 305 310 315 320

Lys Leu Ala Ala Pro Val Ile Ser Val Leu Leu Leu Ser Leu Cys Val
 325 330 335

10 Pro Tyr Val Ile Ala Ser Gly Val Val Pro Leu Leu Gly Val Thr Ala
 340 345 350

Glu Met Gln Asn Leu Val His Arg Arg Ile Tyr Pro Phe Leu Leu Met
 355 360 365

15 Val Val Val Leu Met Ala Ile Leu Ser Phe Gln Val Arg Gln Phe Lys
 370 375 380

20 Arg Leu Tyr Glu His Ile Lys Asn Asp Lys Tyr Leu Val Gly Gln Arg
 385 390 395 400

Leu Val Asn Tyr Glu Arg Lys Ser Gly Lys Gln Gly Ser Ser Pro Pro
 405 410 415

25 Pro Pro Gln Ser Ser Gln Glu
 420

30 (2) INFORMATION FOR SEQ ID NO: 400:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 400:

Met Leu Arg Leu Asp Ile Ile Asn Ser Leu Val Thr Thr Val Phe Met
 1 5 10 15

40 Leu Ile Val Ser Val Leu Ala Leu Ile Pro Glu Thr Thr Thr Leu Thr
 20 25 30

Val Gly Gly Gly Val Phe Ala Leu Val Thr Ala Val Cys Cys Leu Ala
 35 40 45

45 Asp Gly Ala Leu Ile Tyr Arg Lys Leu Leu Phe Asn Pro Ser Gly Pro
 50 55 60

50 Tyr Gln Lys Lys Pro Val His Glu Lys Lys Glu Val Leu Xaa
 65 70 75

55 (2) INFORMATION FOR SEQ ID NO: 401:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 74 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 401:

Met Leu Lys Gln Val Met Phe Val Phe Ser Gly Met Gly Pro Arg Ser
 1 5 10 15
 - 5 His Cys Trp Gly Leu Pro Leu His Val Ala Pro Leu Cys Arg Gly His
 20 25 30
 10 Gln Ala Asp Ser Ser His Leu Leu Pro Leu Lys His Gln Gly Ala Trp
 35 40 45
 Asn Arg Asn Leu Ala Asn Gln Arg His Phe Phe Cys Pro Ser Ile Phe
 50 55 60
 15 His Thr Cys Pro Thr Val Leu Phe Phe Xaa
 65 70

20 (2) INFORMATION FOR SEQ ID NO: 402:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
 (B) TYPE: amino acid
 25 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 402:

Ala Arg Thr Ile Leu Val Leu Tyr Leu Ser Leu Gln Arg Leu Glu Asn
 1 5 10 15
 30 Leu Ala Tyr His
 20

35 (2) INFORMATION FOR SEQ ID NO: 403:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 87 amino acids
 40 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 403:

Met Pro Leu Pro Ser Val Pro Ile Leu Gly Ile Phe Ser Phe Leu Ile
 1 5 10 15
 45 Pro Ser Ser Gln Gly Val Ser Tyr Thr Lys Leu Pro Ile Ser Ser Pro
 20 25 30
 50 Gln Tyr Ser Pro Phe Val Asn Asp His Phe Ser Phe Leu Asn Pro Phe
 35 40 45
 Pro Val Gln Ile His Thr Gly Phe Ala Arg Val Gly Ser Tyr Met Gln
 50 55 60
 55 Met Pro Leu Val His Leu Cys Leu Leu Gln Thr Ser Leu Met Lys Asn
 65 70 75 80
 60 Ser Gly Val Gln Gln Gly Ser
 85

(2) INFORMATION FOR SEQ ID NO: 404:

5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 92 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

10

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 404:

Met Asn Ala Ala Met Val His Ile Asn Arg Ala Leu Lys Leu Ile Ile
 1 5 10 15

Arg Leu Phe Leu Val Glu Asp Leu Val Asp Ser Leu Lys Leu Ala Val
 20 25 30

Phe Met Trp Leu Met Thr Tyr Val Gly Ala Val Phe Asn Gly Ile Thr
 35 40 45

Leu Leu Ile Leu Ala Glu Leu Leu Ile Phe Ser Val Pro Ile Val Tyr
 50 55 60

Glu Lys Tyr Lys Thr Gln Ile Asp His Tyr Val Gly Ile Ala Arg Asp
 65 70 75 80

Gln Thr Lys Ser Ile Val Glu Lys Ile Pro Ser Lys
 85 90

30

(2) INFORMATION FOR SEQ ID NO: 405:

35

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 405:

Met Ala Cys Ser Cys Leu Met Ile Gln Ser Phe Ser Thr Ser Ala Leu
 1 5 10 15

Val Leu Phe Tyr Gly
 20

45

(2) INFORMATION FOR SEQ ID NO: 406:

50

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 174 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 406:

55

Met Glu Glu Gly Gly Asn Leu Gly Gly Leu Ile Lys Met Val His Leu
 1 5 10 15

60

Leu Val Leu Ser Gly Ala Trp Gly Met Gln Met Trp Val Thr Phe Val
 20 25 30

Ser Gly Phe Pro Ala Phe Pro Lys Pro Ser Pro Thr Tyr Leu Arg Thr
 35 40 45
 5 Ser Ala Glu Gln Thr Leu Pro Leu Leu Leu Pro His Leu His Gly Leu
 50 55 60
 Cys Leu His Gln Pro Leu His Leu Gly Phe Thr Ala Cys Leu Gly Ser
 65 70 75 80
 10 Ala His Ile Leu Gly Gly Gln Pro Ala Leu Pro Ala Val Pro Glu Pro
 85 90 95
 Tyr Ala Gly His Cys Gln Arg Pro Leu Ala Gly Thr Pro His His Ser
 15 100 105 110
 Cys His Val Gly Pro Ala Asn Arg Gly Arg Arg Ser Glu Ala Trp Val
 115 120 125
 20 Gly Arg Tyr Gln Ala Ala Asn Arg Phe Pro Ile Leu Asn Ala Xaa Cys
 130 135 140
 Glu Arg Arg Thr Pro Ser Thr Val Leu Ser Ala Arg Ile Ser Ser Ala
 145 150 155 160
 25 Thr Met Gly Cys Pro Leu Phe Ala Ile Trp Ala Ala Ser Xaa
 165 170

30

(2) INFORMATION FOR SEQ ID NO: 407:

(i) SEQUENCE CHARACTERISTICS:

35

(A) LENGTH: 64 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 407:

40 Met Ala Phe Ile Leu Leu Phe Tyr Cys Leu Met Thr Phe Leu Ser Leu
 1 5 10 15
 Glu Gln Asn Ser Ala Thr Val Glu Pro Ser Ser His Glu Ile Leu His
 20 25 30
 45 Leu Leu Gln Asn Cys Phe Glu Leu Leu Arg Thr Ser Thr Ser Gln Cys
 35 40 45
 Thr Glu Gly Ile Pro Cys Gln Arg Tyr Gln Asn Gly Leu His Ile Xaa
 50 55 60

55

(2) INFORMATION FOR SEQ ID NO: 408:

(i) SEQUENCE CHARACTERISTICS:

60

(A) LENGTH: 280 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 408:

5 Met Glu Ala Val Val Asn Leu Tyr Gln Glu Val Met Lys His Ala Asp
 1 5 10 15
 Pro Arg Ile Gln Gly Tyr Pro Leu Met Gly Ser Pro Leu Leu Met Thr
 20 25 30
 10 Ser Ile Leu Leu Thr Tyr Val Tyr Phe Val Leu Ser Leu Gly Pro Arg
 35 40 45
 Ile Met Ala Asn Arg Lys Pro Phe Gln Leu Arg Gly Phe Met Ile Val
 50 55 60
 15 Tyr Asn Phe Ser Leu Val Ala Leu Ser Leu Tyr Ile Val Tyr Glu Phe
 65 70 75 80
 20 Leu Met Ser Gly Trp Leu Ser Thr Tyr Thr Trp Arg Cys Asp Pro Val
 85 90 95
 Asp Tyr Ser Asn Ser Pro Glu Ala Leu Arg Met Val Arg Val Ala Trp
 100 105 110
 25 Leu Phe Leu Phe Ser Lys Phe Ile Glu Leu Met Asp Thr Val Ile Phe
 115 120 125
 Ile Leu Arg Lys Lys Asp Gly Gln Val Thr Phe Leu His Val Phe His
 130 135 140
 30 His Ser Val Leu Pro Trp Ser Trp Trp Trp Gly Val Lys Ile Ala Pro
 145 150 155 160
 35 Gly Gly Met Gly Ser Phe His Ala Met Ile Asn Ser Ser Val His Val
 165 170 175
 Ile Met Tyr Leu Tyr Tyr Gly Leu Ser Ala Phe Gly Pro Val Ala Gln
 180 185 190
 40 Pro Tyr Leu Trp Trp Lys Lys His Met Thr Ala Ile Gln Leu Ile Gln
 195 200 205
 Phe Val Leu Val Ser Leu His Ile Ser Gln Tyr Tyr Phe Met Ser Ser
 210 215 220
 45 Cys Asn Tyr Gln Tyr Pro Val Ile Ile His Leu Ile Trp Met Tyr Gly
 225 230 235 240
 50 Thr Ile Phe Phe Met Leu Phe Ser Asn Phe Trp Tyr His Ser Tyr Thr
 245 250 255
 Lys Gly Lys Arg Leu Pro Arg Ala Leu Gln Gln Asn Gly Ala Pro Gly
 260 265 270
 55 Ile Ala Lys Val Lys Ala Asn Xaa
 275 280

60 (2) INFORMATION FOR SEQ ID NO: 409:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 284 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 409:

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Met Xaa Leu Trp Pro Gln Thr Cys Ser Gly Lys Phe Asp Gly Thr Leu
  1           5           10           15

Ala Phe Ser Ile His Xaa Leu Ala Val Ile Leu Gly Asp Gln Leu Thr
  20           25           30

Ala Ala Asp Leu Val Pro Ile Phe Asn Gly Phe Leu Lys Asp Leu Asp
  35           40           45

Glu Val Arg Ile Gly Val Leu Lys His Leu His Asp Phe Leu Lys Leu
  50           55           60

Leu His Ile Asp Lys Arg Arg Glu Tyr Leu Tyr Gln Leu Gln Glu Phe
  65           70           75           80

Leu Val Thr Asp Asn Ser Arg Asn Trp Arg Phe Arg Ala Glu Leu Ala
  85           90           95

Glu Gln Leu Ile Leu Leu Leu Glu Leu Tyr Ser Pro Arg Asp Val Tyr
 100           105           110

Asp Tyr Leu Arg Pro Ile Ala Leu Asn Leu Cys Ala Asp Lys Val Ser
 115           120           125

Ser Val Arg Trp Ile Ser Tyr Lys Leu Val Ser Glu Met Val Lys Lys
 130           135           140

Leu His Ala Ala Thr Pro Pro Thr Phe Gly Val Asp Leu Ile Asn Glu
 145           150           155           160

Leu Val Glu Asn Phe Gly Arg Cys Pro Lys Trp Ser Gly Arg Gln Ala
 165           170           175

Phe Val Phe Val Cys Gln Thr Val Ile Glu Asp Asp Cys Leu Pro Met
 180           185           190

Asp Gln Phe Ala Val His Leu Met Pro His Leu Leu Thr Leu Ala Asn
 195           200           205

Asp Arg Val Pro Asn Val Arg Val Leu Leu Ala Lys Thr Leu Arg Gln
 210           215           220

Thr Leu Leu Glu Lys Asp Tyr Phe Leu Ala Ser Ala Ser Cys His Gln
 225           230           235           240

Glu Ala Val Glu Gln Thr Ile Met Ala Leu Gln Met Asp Arg Asp Ser
 245           250           255

Asp Val Lys Tyr Phe Ala Ser Ile His Pro Ala Ser Thr Lys Ile Ser
 260           265           270

Glu Asp Ala Met Ser Thr Ala Ser Ser Thr Tyr Xaa
 275           280

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-5 (2) INFORMATION FOR SEQ ID NO: 410:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 187 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

10 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 410:

Met Leu Phe Leu Phe Phe Val Ile Ile Phe Leu Phe Val Phe Leu Ile
1 5 10 15

15 Leu Ile Ile Gln Phe Ser Lys Pro Leu Thr Asn Pro His Pro Pro Ala
20 25 30

Gly Xaa Ser Asp Arg Arg Arg Arg Tyr Ser Ser Tyr Arg Ser His Asp
35 40 45

20 His Tyr Gln Arg Gln Arg Val Leu Gln Lys Glu Arg Ala Ile Glu Glu
50 55 60

Arg Arg Val Val Phe Ile Gly Lys Ile Pro Gly Arg Met Thr Arg Ser
25 65 70 75 80

Glu Leu Lys Gln Arg Phe Ser Val Phe Gly Glu Ile Glu Glu Cys Thr
85 90 95

30 Ile His Phe Arg Val Gln Gly Asp Asn Tyr Gly Phe Val Thr Tyr Arg
100 105 110

Tyr Ala Glu Glu Ala Phe Ala Ala Ile Glu Ser Gly His Lys Leu Arg
115 120 125

35 Gln Ala Asp Glu Gln Pro Phe Asp Leu Cys Phe Gly Gly Arg Arg Xaa
130 135 140

Xaa Cys Lys Arg Ser Tyr Ser Asp Leu Asp Ser Asn Arg Glu Asp Phe
40 145 150 155 160

Asp Pro Ala Pro Val Lys Ser Lys Phe Asp Ser Leu Asp Phe Asp Thr
165 170 175

45 Leu Leu Lys Gln Ala Gln Lys Asn Leu Arg Arg
180 185

50 (2) INFORMATION FOR SEQ ID NO: 411:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 237 amino acids

(B) TYPE: amino acid

55 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 411:

Met Lys Leu Pro Gly Lys Phe Arg Arg Ala His Gln Gly Asn Leu Glu
1 5 10 15

60

601

Ser Gln Leu Thr Ser Glu Ser Tyr Tyr Lys Glu Thr Leu Ser Val Pro
 20 25 30
 5 Thr Val Glu His Ile Ile Gln Glu Leu Lys Asp Ile Phe Ser Glu Gln
 35 40 45
 His Leu Lys Ala Leu Lys Cys Leu Ser Leu Val Pro Ser Val Met Gly
 50 55 60
 10 Gln Leu Lys Phe Asn Thr Ser Glu Glu His His Ala Asp Met Tyr Arg
 65 70 75 80
 Ser Asp Leu Pro Asn Pro Asp Thr Leu Ser Ala Glu Leu His Cys Trp
 85 90 95
 15 Arg Ile Lys Trp Lys His Arg Gly Lys Asp Ile Glu Leu Pro Ser Thr
 100 105 110
 Ile Tyr Glu Ala Leu His Leu Pro Asp Ile Lys Phe Phe Pro Asn Val
 115 120 125
 Tyr Ala Leu Leu Lys Val Leu Cys Ile Leu Pro Val Met Lys Val Glu
 130 135 140
 25 Asn Glu Arg Tyr Glu Asn Gly Arg Lys Arg Leu Lys Ala Tyr Leu Arg
 145 150 155 160
 Asn Thr Leu Thr Asp Gln Arg Ser Ser Asn Leu Ala Leu Leu Asn Ile
 165 170 175
 30 Asn Phe Asp Ile Lys His Asp Leu Asp Leu Met Val Asp Thr Tyr Ile
 180 185 190
 Lys Leu Tyr Thr Xaa Xaa Ser Xaa Leu Xaa Thr Xaa Xaa Ser Xaa Xaa
 195 200 205
 Val Glu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa
 210 215 220
 40 Asp Xaa Xaa Xaa Arg Glu Lys Ala Val Arg Cys Met Xaa
 225 230 235

45 (2) INFORMATION FOR SEQ ID NO: 412:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 192 amino acids

(B) TYPE: amino acid

50 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 412:

Met Lys Pro Met Ala Val Val Ala Ser Thr Val Leu Gly Leu Val Gln
 1 5 10 15
 55 Asn Met Arg Ala Phe Gly Gly Ile Leu Val Val Val Tyr Tyr Val Phe
 20 25 30
 Ala Ile Ile Gly Ile Asn Leu Phe Arg Gly Val Ile Val Ala Leu Pro
 35 40 45
 60

602

Gly Asn Ser Ser Leu Ala Pro Ala Asn Gly Ser Ala Pro Cys Gly Ser
 50 55 60
 5 Phe Glu Gln Leu Glu Tyr Trp Ala Asn Asn Phe Asp Asp Phe Ala Ala
 65 70 75 80
 Ala Leu Val Thr Leu Trp Asn Leu Met Val Val Asn Asn Trp Gln Val
 85 90 95
 10 Phe Leu Asp Ala Tyr Arg Arg Tyr Ser Gly Pro Trp Ser Lys Ile Tyr
 100 105 110
 Phe Val Leu Trp Trp Leu Val Ser Ser Val Ile Trp Val Asn Leu Phe
 115 120 125
 15 Leu Ala Leu Ile Leu Glu Asn Phe Leu His Lys Trp Asp Pro Arg Ser
 130 135 140
 20 His Leu Gln Pro Leu Ala Gly Thr Pro Glu Ala Thr Tyr Gln Met Thr
 145 150 155 160
 Val Glu Leu Leu Phe Arg Asp Ile Leu Glu Glu Pro Gly Glu Asp Glu
 165 170 175
 25 Leu Thr Glu Arg Leu Ser Gln His Pro His Leu Trp Leu Cys Arg Xaa
 180 185 190

30

(2) INFORMATION FOR SEQ ID NO: 413:

35

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 21 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

40

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 413:

Asn Val Val Val Val Ala Phe Gly Leu Ile Leu Ile Ile Glu Ser Leu
 1 5 10 15

45

Gly Glu Gln Cys Pro
 20

50

(2) INFORMATION FOR SEQ ID NO: 414:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 51 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 414:

Met Asn Trp Gly Leu Ser Ile Trp Leu His Tyr Tyr Glu Lys Lys Lys
 1 5 10 15

60

Glu Gln Val Phe Leu Val Ile Leu Ala His Val Val Arg Arg Cys Ala
 20 25 30
 Ser Asp Gly Ile Leu Gln Phe Glu Ser Ser Leu Leu Lys Met Arg Arg
 5 35 40 45
 Ala Pro Xaa
 50

10

(2) INFORMATION FOR SEQ ID NO: 415:

(i) SEQUENCE CHARACTERISTICS:
 15 (A) LENGTH: 32 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 415:

20 Met Leu Ile Ile Ser Leu Arg Pro Gln Phe Pro Ser Leu Ile Val Gln
 1 5 10 15
 Leu Glu Cys Ser Val Leu Phe Leu Pro Ile Ser Leu Asn Leu Leu Leu
 20 25 30
 25

30

(2) INFORMATION FOR SEQ ID NO: 416:

(i) SEQUENCE CHARACTERISTICS:
 35 (A) LENGTH: 163 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 416:

40 Met Val Lys Val Cys Asn Asp Ser Asp Arg Trp Ser Leu Ile Ser Leu
 1 5 10 15
 Ser Asn Asn Ser Gly Lys Asn Val Glu Leu Lys Phe Val Asp Ser Leu
 20 25 30
 45 Arg Arg Gln Phe Glu Phe Ser Val Asp Ser Phe Gln Ile Lys Leu Asp
 35 40 45
 Ser Leu Leu Leu Phe Tyr Glu Cys Ser Glu Asn Pro Met Thr Glu Thr
 50 55 60
 50 Phe His Pro Thr Ile Ile Gly Glu Ser Val Tyr Gly Asp Phe Gln Glu
 65 70 75 80
 Ala Phe Asp His Leu Cys Asn Lys Ile Ile Ala Thr Arg Asn Pro Glu
 55 85 90 95
 Glu Ile Arg Gly Gly Gly Leu Leu Lys Tyr Cys Asn Leu Leu Val Arg
 100 105 110
 60 Gly Phe Arg Pro Ala Ser Asp Glu Ile Lys Thr Leu Gln Arg Tyr Met

115 120 125

Cys Ser Arg Phe Phe Ile Asp Phe Ser Asp Ile Gly Glu Gln Gln Arg
130 135 140

5 Lys Leu Glu Ser Tyr Leu Gln Asn His Phe Val Gly Ile Gly Arg Pro
145 150 155 160

Gln Val Xaa

10

15 (2) INFORMATION FOR SEQ ID NO: 417:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 174 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 417:

Met Ala Pro Lys Gly Lys Val Gly Thr Arg Gly Lys Lys Gln Ile Phe
1 5 10 15

25 Glu Glu Asn Arg Glu Thr Leu Lys Phe Tyr Leu Arg Ile Ile Leu Gly
20 25 30

Ala Asn Ala Ile Tyr Cys Leu Val Thr Leu Val Phe Phe Tyr Ser Ser
35 40 45

30 Ala Ser Phe Trp Ala Trp Leu Ala Leu Gly Phe Ser Leu Ala Val Tyr
50 55 60

35 Gly Ala Ser Tyr His Ser Met Ser Ser Met Ala Arg Ala Ala Phe Ser
65 70 75 80

Glu Asp Gly Ala Leu Met Asp Gly Gly Met Asp Leu Asn Met Glu Gln
85 90 95

40 Gly Met Ala Glu His Leu Lys Asp Val Ile Leu Leu Thr Ala Ile Val
100 105 110

Gln Val Leu Ser Cys Phe Ser Leu Tyr Val Trp Ser Phe Trp Leu Leu
115 120 125

45 Ala Pro Gly Arg Ala Leu Tyr Leu Leu Trp Val Asn Val Leu Gly Pro
130 135 140

50 Trp Phe Thr Ala Asp Ser Gly Thr Pro Ala Pro Glu His Asn Glu Lys
145 150 155 160

Arg Gln Arg Arg Gln Glu Arg Arg Gln Met Lys Arg Leu Xaa
165 170

55

(2) INFORMATION FOR SEQ ID NO: 418:

(i) SEQUENCE CHARACTERISTICS:

60 (A) LENGTH: 50 amino acids

605

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 418:

5 Met Glu Leu Pro Lys Gly Leu Gln Gly Val Gly Pro Val Ala Met Met
 1 5 10 15
 Arg Pro Phe Tyr Leu Leu Leu Pro Val Leu Cys Thr Gln Ala Leu Arg
 20 25 30
 10 Gln Ser Gln Gly Lys Ser Pro Leu Leu Trp Lys Arg Thr Cys Cys Leu
 35 40 45
 Ala Xaa
 15 50

(2) INFORMATION FOR SEQ ID NO: 419:

20

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 120 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 419:

Met Leu Gly Lys Gly Gly Gly Arg Ala Gly Leu Leu Arg Tyr Arg Leu
 1 5 10 15
 30 Leu Tyr Phe Thr Leu Val Val Gly Glu Gly Glu Pro Gly Glu Asn Lys
 20 25 30
 Val Thr Ile Pro Phe Phe Glu Thr Gly Lys Lys Ile Ile Phe Cys Ser
 35 40 45
 35 Val Lys Met Val Glu Asn Ser Asn Val Pro Ser His Lys Gly Pro Val
 50 55 60
 40 Pro Leu Arg Ser Glu Gln Trp Glu Leu Lys Ile Ser Glu Thr Leu Gly
 65 70 75 80
 Glu Gly Lys Ile Gly Phe Leu Leu Ile Gly Arg Cys Ser Ser Gly Xaa
 85 90 95
 45 Gly Gly Leu Cys Phe Cys Trp Asp Val Leu Cys Cys Met Tyr Ala Tyr
 100 105 110
 Met Asp Arg Ser Leu Leu Ser Leu
 115 120
 50

(2) INFORMATION FOR SEQ ID NO: 420:

55

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 159 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 420:

606

Met Thr His Leu Leu Leu Thr Ala Thr Val Thr Pro Ser Glu Gln Asn
 1 5 10 15

5 Ser Ser Arg Glu Pro Gly Trp Glu Thr Ala Met Ala Lys Asp Ile Leu
 20 25 30

Gly Glu Ala Gly Leu His Phe Asp Glu Leu Asn Lys Leu Arg Val Leu
 35 40 45

10 Asp Pro Glu Val Thr Gln Gln Thr Ile Glu Leu Lys Glu Glu Cys Lys
 50 55 60

Asp Phe Val Asp Lys Ile Gly Gln Phe Gln Lys Ile Val Gly Gly Leu
 65 70 75 80

15 Ile Glu Leu Val Asp Gln Leu Ala Lys Glu Ala Glu Asn Glu Lys Met
 85 90 95

Lys Ala Ile Gly Ala Arg Asn Leu Leu Lys Ser Ile Ala Lys Gln Arg
 100 105 110

Glu Ala Gln Gln Gln Gln Leu Gln Ala Leu Ile Ala Glu Lys Lys Met
 115 120 125

25 Gln Leu Glu Arg Tyr Arg Val Glu Tyr Glu Ala Leu Cys Lys Val Glu
 130 135 140

Ala Glu Gln Asn Glu Phe Ile Asp Gln Phe Ile Phe Gln Lys Xaa
 145 150 155

30

(2) INFORMATION FOR SEQ ID NO: 421:

35 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 154 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

40 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 421:

Met Asn Val Gly Val Ala His Ser Glu Val Asn Pro Asn Thr Arg Val
 1 5 10 15

45 Met Asn Ser Arg Gly Met Trp Leu Thr Tyr Ala Leu Gly Val Gly Leu
 20 25 30

Leu His Ile Val Leu Leu Ser Ile Pro Phe Phe Ser Val Pro Val Ala
 35 40 45

50 Trp Thr Leu Thr Asn Ile Ile His Asn Leu Gly Met Tyr Val Phe Leu
 50 55 60

His Ala Val Lys Gly Thr Pro Phe Glu Thr Pro Asp Gln Gly Lys Ala
 65 70 75 80

55 Arg Leu Leu Thr His Trp Glu Gln Leu Asp Tyr Gly Val Gln Phe Thr
 85 90 95

Ser Ser Arg Lys Phe Phe Thr Ile Ser Pro Ile Ile Leu Tyr Phe Leu
 100 105 110

60

Ala Ser Phe Tyr Thr Lys Tyr Asp Pro Thr His Phe Ile Leu Asn Thr
 115 120 125

5 Ala Ser Leu Leu Ser Val Leu Ile Pro Lys Met Pro Gln Leu His Gly
 130 135 140

Val Arg Ile Phe Gly Ile Asn Lys Tyr Xaa
 145 150

10

(2) INFORMATION FOR SEQ ID NO: 422:

15

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 204 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 422:

20

Met Val Cys Gly Gly Phe Ala Cys Ser Lys Asn Cys Leu Cys Ala Leu
 1 5 10 15

25

Asn Leu Leu Tyr Thr Leu Val Ser Leu Leu Leu Ile Gly Ile Ala Ala
 20 25 30

Trp Gly Ile Gly Phe Gly Leu Ile Ser Ser Leu Arg Val Val Gly Val
 35 40 45

30

Val Ile Ala Val Gly Ile Phe Leu Phe Leu Ile Ala Leu Val Gly Leu
 50 55 60

Ile Gly Ala Val Lys His His Gln Val Leu Leu Phe Phe Tyr Met Ile
 65 70 75 80

35

Ile Leu Leu Leu Val Phe Ile Val Gln Phe Ser Val Ser Cys Ala Cys
 85 90 95

40

Leu Ala Leu Asn Gln Glu Gln Gln Gly Gln Leu Leu Glu Val Gly Trp
 100 105 110

Asn Asn Thr Ala Ser Ala Arg Asn Asp Ile Gln Arg Asn Leu Asn Cys
 115 120 125

45

Cys Gly Phe Arg Ser Val Asn Pro Asn Asp Thr Cys Leu Ala Ser Cys
 130 135 140

Val Lys Ser Asp His Ser Cys Ser Pro Cys Ala Pro Ile Ile Gly Glu
 145 150 155 160

50

Tyr Ala Gly Glu Val Leu Arg Phe Val Gly Gly Ile Gly Leu Phe Phe
 165 170 175

55

Ser Phe Thr Glu Ile Leu Gly Val Trp Leu Thr Tyr Arg Tyr Arg Asn
 180 185 190

Gln Lys Asp Pro Arg Ala Asn Pro Ser Ala Phe Leu
 195 200

60

(2) INFORMATION FOR SEQ ID NO: 423:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 67 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 423:

10 Met Leu Gln Ser Ile Ile Lys Asn Ile Trp Ile Pro Met Lys Pro Tyr
1 5 10 15
Tyr Thr Lys Val Tyr Gln Glu Ile Trp Ile Gly Met Gly Leu Met Gly
20 25 30
15 Phe Ile Val Tyr Lys Ile Arg Ala Ala Asp Lys Arg Ser Lys Ala Leu
35 40 45
Lys Ala Ser Ala Pro Ala Pro Gly His His Asn Gln Ile Tyr Leu Glu
20 50 55 60
Tyr Met Xaa
65

25

(2) INFORMATION FOR SEQ ID NO: 424:

(i) SEQUENCE CHARACTERISTICS:

- 30 (A) LENGTH: 25 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 424:

35 Met Leu Gly Val Ser Leu Phe Leu Leu Val Val Leu Tyr His Tyr Val
1 5 10 15
Ala Val Asn Asn Pro Lys Lys Gln Glu
20 25
40

(2) INFORMATION FOR SEQ ID NO: 425:

(i) SEQUENCE CHARACTERISTICS:

- 45 (A) LENGTH: 299 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 425:

50 Met Ala Ala Xaa Glu Pro Ala Val Leu Ala Leu Pro Asn Ser Gly Ala
1 5 10 15
Gly Gly Ala Gly Ala Pro Ser Gly Thr Val Pro Val Leu Phe Cys Phe
55 20 25 30
Ser Val Phe Ala Arg Pro Ser Ser Val Pro His Gly Ala Gly Tyr Glu
35 40 45
60 Leu Leu Ile Gln Lys Phe Leu Ser Leu Tyr Gly Asp Gln Ile Asp Met

	50		55		60
	His Arg Lys Phe Val Val Gln Leu Phe Ala Glu Glu Trp Gly Gln Tyr				
	65		70		75 80
5	Val Asp Leu Pro Lys Gly Phe Ala Val Ser Glu Arg Cys Lys Val Arg				
		85		90	95
10	Leu Val Pro Leu Gln Ile Gln Leu Thr Thr Leu Gly Asn Leu Thr Pro				
		100		105	110
	Ser Ser Thr Val Phe Phe Cys Cys Asp Met Gln Glu Arg Phe Arg Pro				
		115		120	125
15	Ala Ile Lys Tyr Phe Gly Asp Ile Ile Ser Val Gly Gln Arg Leu Leu				
		130		135	140
	Gln Gly Ala Arg Ile Leu Gly Ile Pro Val Ile Val Thr Glu Gln Tyr				
		145		150	155 160
20	Pro Lys Gly Leu Gly Ser Thr Val Gln Glu Ile Asp Leu Thr Gly Val				
		165		170	175
	Lys Leu Val Leu Pro Lys Thr Lys Phe Ser Met Val Leu Pro Glu Val				
25		180		185	190
	Glu Ala Ala Leu Ala Glu Ile Pro Gly Val Arg Ser Val Val Leu Phe				
		195		200	205
30	Gly Val Glu Thr His Val Cys Ile Gln Gln Thr Ala Leu Glu Leu Val				
		210		215	220
	Gly Arg Gly Val Glu Val His Ile Val Ala Asp Ala Thr Ser Ser Arg				
		225		230	235 240
35	Ser Met Met Asp Arg Met Phe Ala Leu Glu Arg Leu Ala Xaa Xaa Gly				
		245		250	255
	Ile Ile Val Thr Thr Ser Glu Ala Val Leu Leu Gln Leu Val Ala Asp				
40		260		265	270
	Lys Asp His Pro Lys Phe Lys Glu Ile Gln Asn Leu Ile Lys Ala Ser				
		275		280	285
45	Ala Pro Glu Ser Gly Leu Leu Ser Lys Val Xaa				
		290		295	

50 (2) INFORMATION FOR SEQ ID NO: 426:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 426:

Met Arg Asp Leu Gly Thr Leu Leu Ser Pro Val Cys Ser
1 5 10

60

(2) INFORMATION FOR SEQ ID NO: 427:

5 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 198 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 427:

10 Met Phe Gly Cys Leu Val Ala Gly Arg Leu Val Gln Thr Ala Ala Gln
 1 5 10 15
 15 Gln Val Ala Glu Asp Lys Phe Val Phe Asp Leu Pro Asp Tyr Glu Ser
 20 25 30
 20 Ile Asn His Val Val Val Phe Met Leu Gly Thr Ile Pro Phe Pro Glu
 35 40 45
 25 Gly Met Gly Gly Ser Val Tyr Phe Ser Tyr Pro Asp Ser Asn Gly Met
 50 55 60
 30 Pro Val Trp Gln Leu Leu Gly Phe Val Thr Asn Gly Lys Pro Ser Ala
 65 70 75 80
 35 Ile Phe Lys Ile Ser Gly Leu Lys Ser Gly Glu Gly Ser Gln His Pro
 85 90 95
 40 Phe Gly Ala Met Asn Ile Val Arg Thr Pro Ser Val Ala Gln Ile Gly
 100 105 110
 45 Ile Ser Val Glu Leu Leu Asp Ser Met Ala Gln Gln Thr Pro Val Gly
 115 120 125
 50 Asn Ala Ala Val Ser Ser Val Asp Ser Phe Thr Gln Phe Thr Gln Lys
 130 135 140
 55 Met Leu Asp Asn Phe Tyr Asn Phe Ala Ser Ser Phe Ala Val Ser Gln
 145 150 155 160
 60 Ala Gln Met Thr Pro Ser Pro Ser Glu Met Phe Ile Pro Ala Asn Val
 165 170 175
 65 Val Leu Lys Trp Tyr Glu Asn Phe Gln Arg Arg Leu Ala Gln Asn Pro
 180 185 190
 70 Xaa Phe Trp Xaa Thr Xaa
 195

(2) INFORMATION FOR SEQ ID NO: 428:

55 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 47 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 428:

60 Met Gly Leu Pro Leu Met Ala Leu Met Trp Ser Thr Leu Pro Ala Ser

611

1 5 10 15
 Ala Gly Val Asn Phe Ile Leu Ala Leu Pro Leu Leu Leu Trp Lys
 20 25 30
 5 Asn Arg Gly Gly Val Gly Arg Ser Val Met Ser Ala Val Glu Xaa
 35 40 45

10
 (2) INFORMATION FOR SEQ ID NO: 429:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 370 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 429:

15
 20 Met Lys Lys Val Glu Glu Lys Arg Val Asp Val Asn Ser Ala Val Ala
 1 5 10 15
 Met Gly Glu Val Ile Leu Ala Val Cys His Pro Asp Cys Ile Thr Thr
 20 25 30
 25 Ile Lys His Trp Ile Thr Ile Ile Arg Ala Arg Phe Glu Glu Val Leu
 35 40 45
 Thr Trp Ala Lys Gln His Gln Gln Arg Leu Glu Thr Ala Leu Ser Glu
 50 55 60
 30 Leu Val Ala Asn Ala Glu Leu Leu Glu Glu Leu Leu Ala Trp Ile Gln
 65 70 75 80
 Trp Ala Glu Thr Thr Leu Ile Gln Arg Asp Gln Glu Pro Ile Pro Gln
 85 90 95
 35 Asn Ile Asp Arg Val Lys Ala Leu Ile Ala Glu His Gln Thr Phe Met
 100 105 110
 40 Glu Glu Met Thr Arg Lys Gln Pro Asp Val Asp Arg Val Thr Lys Thr
 115 120 125
 Tyr Lys Arg Lys Asn Ile Glu Pro Thr His Ala Pro Phe Ile Glu Lys
 130 135 140
 45 Ser Arg Ser Gly Gly Arg Lys Ser Leu Ser Gln Pro Thr Pro Pro Pro
 145 150 155 160
 Met Pro Ile Leu Ser Gln Ser Glu Ala Lys Asn Pro Arg Ile Asn Gln
 165 170 175
 Leu Ser Ala Arg Trp Gln Gln Val Trp Leu Leu Ala Leu Glu Arg Gln
 180 185 190
 55 Arg Lys Leu Asn Asp Ala Leu Asp Arg Leu Glu Glu Leu Lys Glu Phe
 195 200 205
 Ala Asn Phe Asp Phe Asp Val Trp Arg Lys Lys Tyr Met Arg Trp Met
 210 215 220
 60

612

Asn His Lys Lys Ser Arg Val Met Asp Phe Phe Arg Arg Ile Asp Lys
 225 230 235 240
 Asp Gln Asp Gly Lys Ile Thr Arg Gln Glu Phe Ile Asp Gly Ile Leu
 245 250 255
 Ala Ser Lys Phe Pro Thr Thr Lys Leu Glu Met Thr Ala Val Ala Asp
 260 265 270
 10 Ile Phe Asp Arg Asp Gly Asp Gly Tyr Ile Asp Tyr Tyr Glu Phe Val
 275 280 285
 Ala Ala Leu His Pro Asn Lys Asp Ala Tyr Arg Pro Thr Thr Asp Ala
 290 295 300
 15 Asp Lys Ile Glu Asp Glu Val Thr Arg Gln Val Ala Gln Cys Lys Cys
 305 310 315 320
 Ala Lys Arg Phe Gln Val Glu Gln Ile Gly Glu Asn Lys Tyr Arg Phe
 325 330 335
 Phe Leu Gly Asn Gln Phe Gly Asp Ser Gln Gln Leu Arg Leu Val Arg
 340 345 350
 25 Ile Leu Arg Asn Arg Asp Gly Ser Arg Trp Trp Arg Met Asp Gly Leu
 355 360 365
 Gly Xaa
 370
 30

(2) INFORMATION FOR SEQ ID NO: 430:

35 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 30 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 430:
 40 Met Asn Val Lys Thr Phe Ser Xaa Asp His Met His Phe Leu Cys Cys
 1 5 10 15
 45 Leu Tyr Leu Arg Tyr Val Thr Phe Val Tyr Leu Asn Leu Phe
 20 25 30

(2) INFORMATION FOR SEQ ID NO: 431:

50 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 24 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 431:
 Met Glu Pro His Leu Arg Cys Arg Val Thr Arg Val Arg Gly Ser Leu
 1 5 10 15
 60 Gly Asn Thr Gly Arg Trp Leu Leu

20

5 (2) INFORMATION FOR SEQ ID NO: 432:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 53 amino acids

(B) TYPE: amino acid

10 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 432:

Met His Tyr Leu Val Leu Gly Gly Leu Gly Val Phe Leu Phe Phe Ser
 1 5 10 15
 Cys Phe Val Phe Leu Phe Phe Xaa Phe Ser Phe Ala Phe Phe Pro Phe
 20 25 30
 Tyr Leu Glu Gly Met Gly Gly Ser Gly Asn Arg Glu Val Gly Gly Gly
 35 40 45
 Phe Cys Leu Phe Phe
 50

25

(2) INFORMATION FOR SEQ ID NO: 433:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 176 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 433:

Met Val Ser Lys Ala Leu Leu Arg Leu Val Ser Ala Val Asn Arg Arg
 1 5 10 15
 Arg Met Lys Leu Leu Leu Gly Ile Ala Leu Leu Ala Tyr Val Ala Ser
 20 25 30
 Val Trp Gly Asn Phe Val Asn Met Arg Ser Ile Gln Glu Asn Gly Glu
 35 40 45
 Leu Lys Ile Glu Ser Lys Ile Glu Glu Met Val Glu Pro Leu Arg Glu
 45 50 55 60
 Lys Ile Arg Asp Leu Glu Lys Ser Phe Thr Gln Lys Tyr Pro Pro Val
 65 70 75 80
 Lys Phe Leu Ser Glu Lys Asp Arg Lys Arg Ile Leu Ile Thr Gly Gly
 85 90 95
 Ala Gly Phe Val Gly Ser His Leu Thr Asp Lys Leu Met Met Asp Gly
 100 105 110
 His Glu Val Thr Val Val Asp Asn Phe Phe Thr Gly Arg Lys Arg Asn
 115 120 125
 Val Glu His Trp Ile Gly His Glu Asn Phe Glu Leu Ile Asn His Asp
 130 135 140

60

Val Trp Ser Pro Ser Thr Ser Arg Leu Thr Arg Tyr Thr Ile Trp His
 145 150 155 160

5 Leu Gln Pro Pro Leu Gln Thr Thr Cys Ile Ile Leu Ser Arg His Xaa
 165 170 175

10

(2) INFORMATION FOR SEQ ID NO: 434:

15 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 77 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 434:

20

Met Leu Arg Cys Trp Pro Leu Phe Trp Leu Pro Leu Val Ser Pro Phe
 1 5 10 15

25 Cys Ser Leu Phe Trp Leu Leu Val Glu Trp Phe Gly Thr Asn Ile Asp
 20 25 30

Arg Glu Ser Tyr Asp Ala Ile Gly Gly Pro Ser Trp Met Thr Ala Ser
 35 40 45

30 Ser Phe Cys Leu Ser Asn Ser Asn Ile Trp Ser Leu Glu Ile Ser Ser
 50 55 60

Gly Ser Thr Ser Val Val His Ser Gln Gln Ala Met Asp
 65 70 75

35

(2) INFORMATION FOR SEQ ID NO: 435:

40 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 32 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 435:

45

Met Arg Ser Cys Glu Ile Gln Leu Cys Val Trp Leu Leu Val Ser Ser
 1 5 10 15

50 His Val Asp Met Val Leu Gly Gly Ser Pro Ser Thr Leu Tyr Met Met
 20 25 30

55

(2) INFORMATION FOR SEQ ID NO: 436:

(i) SEQUENCE CHARACTERISTICS:

60

(A) LENGTH: 30 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 436:

5 Met Val Val Asn Ser Leu Cys Phe Leu Ser Leu Leu Leu Val Ile Leu
 1 5 10 15
 Glu Leu Ser Thr Asp Ser Ser Ala Arg Leu Leu Tyr His Glu
 20 25 30

10

(2) INFORMATION FOR SEQ ID NO: 437:

15 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 69 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 437:

20

Met Asp Lys Gln Lys His Leu Glu Val Arg Arg Ser Val Phe Lys Ile
 1 5 10 15

25

Gln Gly Lys Ile Ala Phe Ser Leu Met Phe Val Leu Lys Asp Leu Ser
 20 25 30

Pro Thr Ile Phe Ser His Ser Ile Leu Leu Leu Leu Pro His His Val
 35 40 45

30

Leu Pro Cys Thr Pro Gln Met Val Arg Gly Val Thr Gln Val Leu Arg
 50 55 60

Glu Phe Gly Asp Gln
 65

35

(2) INFORMATION FOR SEQ ID NO: 438:

40 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 438:

45

Met Pro Leu Cys Phe Phe Ser Phe Leu Cys Cys Trp Val Leu Val Phe
 1 5 10 15

Lys Leu Ile

50

(2) INFORMATION FOR SEQ ID NO: 439:

55

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 43 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 439:

Met Lys Phe Ser Leu Val Leu Leu Ile Lys Ile Ile Ser Phe Glu Arg
 1 5 10 15
 5 Leu Leu Ile Phe Leu Phe Pro Leu Ser Phe Leu Pro Asn Ile Trp Arg
 20 25 30
 Arg Val Met Val Asn Leu Asn Ile Leu Phe Xaa
 35 40
 10

(2) INFORMATION FOR SEQ ID NO: 440:

15 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 33 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 440:
 20 Met Leu Leu Phe Pro Ser Leu Leu Phe Ala Ala Thr Tyr Asn Val Ala
 1 5 10 15
 25 Asn Pro Ser Arg Leu Ile Leu Tyr Met Ile Ser Ala Gly Ala Asp Ser
 20 25 30
 Gln

30

(2) INFORMATION FOR SEQ ID NO: 441:

35 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 53 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 441:
 40 Met Trp Gln Val Arg Gly Leu Pro Pro Val Pro Leu Leu Leu Thr Met
 1 5 10 15
 Ser Pro Pro Pro Cys Leu Ser Ser Pro Phe Pro Phe Ile Ser Val Pro
 20 25 30
 45 Leu Phe Glu Ala Val Pro Ile Ser Val Ser Asp Gln Pro Ser Pro Xaa
 35 40 45
 Leu Thr Thr Leu Leu
 50 50

(2) INFORMATION FOR SEQ ID NO: 442:

55 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 64 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 60 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 442:

Met Ile Thr Ser Val Leu Val Phe Leu Ile Phe Phe Phe Pro Tyr Leu
 1 5 10 15
 5 Ser Leu Val Thr Leu Leu Gln Ala Arg Asn Leu Trp Val Ile His Arg
 20 25 30
 Ala Ala Leu Cys Glu Ser Gly Leu Phe His Trp Arg Lys Gly Ile Glu
 35 40 45
 10 Asn Gln Leu Glu Pro Met Tyr Phe Leu Pro His Gly Thr Leu Phe Leu
 50 55 60

15

(2) INFORMATION FOR SEQ ID NO: 443:
 20

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 34 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 443:

Met Leu Tyr Ser Cys Glu Pro Tyr Leu Ile Ile Leu Asn Ile Tyr Ser
 1 5 10 15
 30 Gln Lys Ala Phe Tyr Phe Tyr Phe Phe Glu Gly Ser Phe Ser Val Cys
 20 25 30
 Thr Leu

35

(2) INFORMATION FOR SEQ ID NO: 444:

40 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 89 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 444:

Met Arg Gln Arg Gln Ala Ala Cys Gln Pro Pro Pro Ser Arg Asn Gly
 1 5 10 15
 50 Leu Ala Gln Glu Cys Pro Pro His Ile Pro Ser Ser Phe Phe Leu Val
 20 25 30
 Lys Leu Leu Phe Ile Pro Trp Leu Ala Ser Leu Leu Ser Ser Pro Leu
 35 40 45
 55 Asn Leu Leu Leu Leu Val Ser Ile Ser Trp Asp Leu Gly Leu Lys Leu
 50 55 60
 Asn Leu Gln Gln Cys Arg Gln His Gln Val Leu Gln Glu Lys Asn Thr
 65 70 75 80

60

Lys Lys Phe Asn Lys Lys Lys Lys
85

-5

(2) INFORMATION FOR SEQ ID NO: 445:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 350 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 445:

15 Met Asp Phe Ile Thr Ser Thr Ala Ile Leu Pro Leu Leu Phe Gly Cys
1 5 10 15

Leu Gly Val Phe Gly Leu Phe Arg Leu Leu Gln Trp Val Arg Gly Lys
20 25 30

20 Ala Tyr Leu Arg Asn Ala Val Val Val Ile Thr Gly Ala Thr Ser Gly
35 40 45

Leu Gly Lys Glu Cys Ala Lys Val Phe Tyr Ala Ala Gly Ala Lys Leu
50 55 60

25 Val Leu Cys Gly Arg Asn Gly Gly Ala Leu Glu Glu Leu Ile Arg Glu
65 70 75 80

30 Leu Thr Ala Ser His Ala Thr Lys Val Gln Thr His Lys Pro Tyr Leu
85 90 95

Val Thr Phe Asp Leu Thr Asp Ser Gly Ala Ile Val Ala Ala Ala Ala
100 105 110

35 Glu Ile Leu Gln Cys Phe Gly Tyr Val Asp Ile Leu Val Asn Asn Ala
115 120 125

Gly Ile Ser Tyr Arg Gly Thr Ile Met Asp Thr Thr Val Asp Val Asp
130 135 140

40 Lys Arg Val Met Glu Thr Asn Tyr Phe Gly Pro Val Ala Leu Thr Lys
145 150 155 160

Ala Leu Leu Pro Ser Met Ile Lys Arg Arg Gln Gly His Ile Val Ala
165 170 175

Ile Ser Ser Ile Gln Gly Lys Met Ser Ile Pro Phe Arg Ser Ala Tyr
180 185 190

50 Ala Ala Ser Lys His Ala Thr Gln Ala Phe Phe Asp Cys Leu Arg Ala
195 200 205

Glu Met Glu Gln Tyr Glu Ile Glu Val Thr Val Ile Ser Pro Gly Tyr
210 215 220

55 Ile His Thr Asn Leu Ser Val Asn Ala Ile Thr Ala Asp Gly Ser Arg
225 230 235 240

Tyr Gly Val Met Asp Thr Thr Thr Ala Gln Gly Arg Ser Pro Val Glu
245 250 255

60

Val Ala Gln Asp Val Leu Ala Ala Val Gly Lys Lys Lys Lys Asp Val
 260 265 270

-5 Ile Leu Ala Asp Leu Leu Pro Ser Leu Ala Val Tyr Leu Arg Thr Leu
 275 280 285

Ala Pro Gly Leu Phe Phe Ser Leu Met Pro Pro Gly Pro Glu Lys Ser
 290 295 300

10 Gly Asn Pro Arg Thr Pro Ser Thr Leu Thr Ser Gln Gly Gln Gly Arg
 305 310 315 320

15 Glu Ala Ala Leu Leu Gly Leu Leu Thr Leu Gln Gly Thr Val Ala Phe
 325 330 335

Val Glu Thr Leu Met Glu Ile Cys Leu Thr Ser Gly Lys Asp
 340 345 350

20

(2) INFORMATION FOR SEQ ID NO: 446:

(i) SEQUENCE CHARACTERISTICS:
 25 (A) LENGTH: 49 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 446:

30 Met Val Phe Leu Pro Arg Gly Val Val Val Ser Gly Gly Ala Ala Cys
 1 5 10 15

Leu Trp Leu Thr Phe Ile Leu Glu Thr Glu Val Tyr Leu Asp Leu Ala
 20 25 30

35 Thr Glu Ala Arg Ala His Ser Arg Met Gly Leu Gly Leu Trp Pro Pro
 35 40 45

40 Asn

40

(2) INFORMATION FOR SEQ ID NO: 447:

45 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 278 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 447:

Met Ala Ser Ala Glu Leu Asp Tyr Thr Ile Glu Ile Pro Asp Gln Pro
 1 5 10 15

55 Cys Trp Ser Gln Lys Asn Ser Pro Ser Pro Gly Gly Lys Glu Ala Glu
 20 25 30

Thr Arg Gln Pro Val Val Ile Leu Gly Trp Gly Gly Cys Lys Asp
 35 40 45

60

620

Lys Asn Leu Ala Lys Tyr Ser Ala Ile Tyr His Lys Arg Gly Cys Ile
 50 55 60
 Val Ile Arg Tyr Thr Ala Pro Trp His Met Val Phe Phe Ser Glu Ser
 - 5 65 70 75 80
 Leu Gly Ile Pro Ser Leu Arg Val Leu Ala Gln Lys Leu Leu Glu Leu
 85 90 95
 10 Leu Phe Asp Tyr Glu Ile Glu Lys Glu Pro Leu Leu Phe His Val Phe
 100 105 110
 Ser Asn Gly Gly Val Met Leu Tyr Arg Tyr Val Leu Glu Leu Leu Gln
 115 120 125
 15 Thr Arg Arg Phe Cys Arg Leu Arg Val Val Gly Thr Ile Phe Asp Ser
 130 135 140
 20 Ala Pro Gly Asp Ser Asn Leu Val Gly Ala Leu Arg Ala Leu Ala Ala
 145 150 155 160
 Ile Leu Glu Arg Arg Ala Ala Met Leu Arg Leu Leu Leu Leu Val Ala
 165 170 175
 25 Phe Ala Leu Val Val Val Leu Phe His Val Leu Leu Ala Pro Ile Thr
 180 185 190
 Ala Xaa Phe His Thr His Phe Tyr Asp Arg Leu Gln Asp Ala Gly Ser
 195 200 205
 30 Arg Trp Pro Glu Leu Tyr Leu Tyr Ser Arg Ala Asp Glu Val Val Leu
 210 215 220
 35 Ala Arg Asp Ile Glu Arg Met Val Glu Ala Arg Leu Ala Arg Arg Val
 225 230 235 240
 Leu Ala Arg Ser Val Asp Phe Val Ser Ser Ala His Val Ser His Leu
 245 250 255
 40 Arg Asp Tyr Pro Thr Tyr Tyr Thr Ser Leu Cys Val Asp Phe Met Arg
 260 265 270
 Asn Cys Val Arg Cys Xaa
 275
 45

(2) INFORMATION FOR SEQ ID NO: 448:

50

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 199 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 448:

Met Ser Phe Ile Phe Asp Trp Ile Tyr Ser Gly Phe Ser Ser Val Leu
 1 5 10 15
 Gln Phe Leu Gly Leu Tyr Lys Lys Thr Gly Lys Leu Val Phe Leu Gly
 20 25 30
 60

Leu Asp Asn Ala Gly Lys Thr Thr Leu Leu His Met Leu Lys Asp Asp
 35 40 45
 -5 Arg Leu Gly Gln His Val Pro Thr Leu His Pro Thr Ser Glu Glu Leu
 50 55 60
 Thr Ile Ala Gly Met Thr Phe Thr Thr Phe Asp Leu Gly Gly His Val
 65 70 75 80
 10 Gln Ala Arg Arg Val Trp Lys Asn Tyr Leu Pro Ala Ile Asn Gly Ile
 85 90 95
 Val Phe Leu Val Asp Cys Ala Asp His Glu Arg Leu Leu Glu Ser Lys
 15 100 105 110
 Glu Glu Leu Asp Ser Leu Met Thr Asp Glu Thr Ile Ala Asn Val Pro
 115 120 125
 20 Ile Leu Ile Leu Gly Asn Lys Ile Asp Arg Pro Glu Ala Ile Ser Glu
 130 135 140
 Glu Arg Leu Arg Glu Met Phe Gly Leu Tyr Gly Gln Thr Thr Gly Lys
 145 150 155 160
 25 Gly Ser Ile Ser Leu Lys Glu Leu Asn Ala Arg Pro Leu Glu Val Phe
 165 170 175
 Met Cys Ser Val Leu Lys Arg Gln Gly Tyr Gly Glu Gly Phe Arg Trp
 30 180 185 190
 Met Ala Gln Tyr Ile Asp Xaa
 195

35

(2) INFORMATION FOR SEQ ID NO: 449:

40 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 258 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 449:

45 Met Thr Leu Ser Arg Phe Ala Tyr Asn Gly Lys Arg Cys Pro Ser Ser
 1 5 10 15
 Tyr Asn Ile Leu Asp Asn Ser Lys Ile Ile Ser Glu Glu Cys Arg Lys
 20 25 30
 50 Glu Leu Thr Ala Leu Leu His His Tyr Tyr Pro Ile Glu Ile Asp Pro
 35 40 45
 His Arg Thr Val Lys Glu Lys Leu Pro His Met Val Glu Trp Trp Thr
 55 50 55 60
 Lys Ala His Asn Leu Leu Cys Gln Gln Lys Ile Gln Lys Phe Gln Ile
 65 70 75 80
 60 Ala Gln Val Val Arg Glu Ser Asn Ala Met Leu Arg Glu Gly Tyr Lys

622

85 90 95

Thr Phe Phe Asn Thr Leu Tyr His Asn Asn Ile Pro Leu Phe Ile Phe
100 105 110

-5 Ser Ala Gly Ile Gly Asp Ile Leu Glu Glu Ile Ile Arg Gln Met Lys
115 120 125

10 Val Phe His Pro Asn Ile His Ile Val Ser Asn Tyr Met Asp Phe Asn
130 135 140

Glu Asp Gly Phe Leu Gln Gly Phe Lys Gly Gln Leu Ile His Thr Tyr
145 150 155 160

15 Asn Lys Asn Ser Ser Val Cys Glu Asn Xaa Gly Tyr Phe Gln Gln Leu
165 170 175

Glu Gly Lys Thr Asn Val Ile Leu Leu Gly Asp Ser Ile Gly Asp Leu
180 185 190

20 Thr Met Ala Asp Gly Val Pro Gly Val Gln Asn Ile Leu Lys Ile Gly
195 200 205

25 Phe Leu Asn Asp Lys Val Glu Glu Arg Arg Xaa Arg Tyr Met Asp Ser
210 215 220

Tyr Asp Ile Val Leu Glu Lys Asp Glu Thr Leu Asp Val Val Asn Gly
225 230 235 240

30 Leu Leu Gln His Ile Leu Cys Gln Gly Val Gln Leu Glu Met Gln Gly
245 250 255

Pro Xaa

35

(2) INFORMATION FOR SEQ ID NO: 450:

40

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 87 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 450:

50

Met Ser His Val Leu Leu Cys Pro Ser Leu Ser Cys Ser Asn Leu Leu
1 5 10 15

55

Pro Pro Ser His Ser Leu Gly Thr Met Gly Ser Leu Ser Pro His Leu
20 25 30

Cys Gly His Thr Met Cys Pro Val Asn Pro Glu Leu Pro Leu Ser Ser
35 40 45

60

Arg Leu Thr Thr Asp Gln Pro Gln Pro Asp Ala Cys Ser Pro Thr Leu
50 55 60

Leu Thr Leu Pro Leu Pro Ser Ser Phe Leu Pro His Ser Lys Pro Thr
65 70 75 80

Phe Xaa His Pro Cys Ser Pro
85

- 5

(2) INFORMATION FOR SEQ ID NO: 451:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 315 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 451:

10 Met Phe Ser Ile Asn Pro Leu Glu Asn Leu Lys Val Tyr Ile Ser Ser
15 1 5 10 15
Arg Pro Pro Leu Val Val Phe Met Ile Ser Val Xaa Pro Met Ala Ile
20 20 25 30
Ala Phe Leu Thr Leu Gly Tyr Phe Phe Lys Ile Lys Glu Ile Lys Ser
25 35 40 45
Pro Glu Met Ala Glu Asp Trp Asn Thr Phe Leu Leu Arg Phe Asn Asp
25 50 55 60
Leu Asp Leu Cys Val Ser Glu Asn Glu Thr Leu Lys His Leu Thr Asn
65 70 75 80
Asp Thr Thr Thr Pro Glu Ser Thr Met Thr Ser Gly Gln Ala Arg Ala
30 85 90 95
Ser Thr Gln Ser Pro Gln Ala Leu Glu Asp Ser Gly Pro Val Asn Ile
100 105 110
35 Ser Val Ser Ile Thr Leu Thr Leu Asp Pro Leu Lys Pro Phe Gly Gly
115 120 125
Tyr Ser Arg Asn Val Thr His Leu Tyr Ser Thr Ile Leu Gly His Gln
40 130 135 140
Ile Gly Leu Ser Gly Arg Glu Ala His Glu Glu Ile Asn Ile Thr Phe
145 150 155 160
Thr Leu Pro Thr Ala Trp Ser Ser Asp Asp Cys Ala Leu His Gly His
45 165 170 175
Cys Glu Gln Val Val Phe Thr Ala Cys Met Thr Leu Thr Ala Ser Pro
180 185 190
50 Gly Val Phe Pro Val Thr Val Gln Pro Pro His Cys Val Pro Asp Thr
195 200 205
Tyr Ser Asn Ala Thr Leu Trp Tyr Lys Ile Phe Thr Thr Ala Arg Asp
55 210 215 220
Ala Asn Thr Lys Tyr Ala Gln Asp Tyr Asn Pro Phe Trp Cys Tyr Lys
225 230 235 240
60 Gly Ala Ile Gly Lys Val Tyr His Ala Leu Asn Pro Lys Leu Thr Val
245 250 255

Ile Val Pro Asp Asp Asp Arg Ser Leu Ile Asn Leu His Leu Met His
 260 265 270

-5 Thr Ser Tyr Phe Leu Phe Val Met Val Ile Thr Met Phe Cys Tyr Ala
 275 280 285

Val Ile Lys Gly Arg Pro Ser Lys Leu Arg Gln Ser Asn Pro Glu Phe
 290 295 300

10 Cys Pro Glu Lys Val Ala Leu Ala Glu Ala Xaa
 305 310 315

15

(2) INFORMATION FOR SEQ ID NO: 452:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 52 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 452:

20

25 Met Pro Gly Leu Ser Leu Ala Leu Leu Pro Phe Gly Pro Gly Cys Thr
 1 5 10 15

Glu Ala Leu His Ala Gly Cys Phe Pro Ala Phe Ala Ser Ala Thr Arg
 20 25 30

30 Val Asn Gly Glu Ala Ala Leu Ser Pro Gly Leu Cys Asp Pro Ile Ser
 35 40 45

Val Pro Tyr Val
 50

35

(2) INFORMATION FOR SEQ ID NO: 453:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 383 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 453:

40

45 Met Ala Val Gly Gln Ile Met Thr Phe Gly Ser Pro Val Ile Gly Cys
 1 5 10 15

Gly Phe Ile Ser Gly Trp Asn Leu Val Ser Met Cys Val Glu Tyr Val
 50 20 25 30

Leu Leu Trp Lys Val Tyr Gln Lys Thr Pro Ala Leu Ala Val Lys Ala
 35 40 45

55 Gly Leu Lys Glu Glu Glu Thr Glu Leu Lys Gln Leu Asn Leu His Lys
 50 55 60

Asp Thr Glu Pro Lys Pro Leu Glu Gly Thr His Leu Met Gly Val Lys
 65 70 75 80

60

Asp Ser Asn Ile His Glu Leu Glu His Glu Gln Glu Pro Thr Cys Ala
 85 90 95
 Ser Gln Met Ala Glu Pro Phe Arg Thr Phe Arg Asp Gly Trp Val Ser
 100 105 110
 Tyr Tyr Asn Gln Pro Val Phe Leu Ala Gly Met Gly Leu Ala Phe Leu
 115 120 125
 Tyr Met Thr Val Leu Gly Phe Asp Cys Ile Thr Thr Gly Tyr Ala Tyr
 130 135 140
 Thr Gln Gly Leu Ser Gly Phe His Pro Gln Tyr Phe Asp Gly Ser Ile
 145 150 155 160
 Ser Tyr Asn Trp Asn Asn Gly Asn Cys Ser Phe Tyr Leu Ala Thr Ser
 165 170 175
 Lys Met Trp Phe Gly Ser Ala Gly Leu Ile Ser Gly Leu Ala Gln Leu
 180 185 190
 Ser Cys Leu Ile Leu Cys Val Ile Ser Val Phe Met Pro Gly Ser Pro
 195 200 205
 Leu Asp Leu Ser Val Ser Pro Phe Glu Asp Ile Arg Ser Arg Phe Ile
 210 215 220
 Gln Gly Glu Ser Ile Thr Pro Thr Lys Ile Pro Glu Ile Thr Thr Glu
 225 230 235 240
 Ile Tyr Met Ser Asn Gly Ser Asn Ser Ala Asn Ile Val Pro Glu Thr
 245 250 255
 Ser Pro Glu Ser Val Pro Ile Ile Ser Val Ser Leu Leu Phe Ala Gly
 260 265 270
 Val Ile Ala Ala Arg Ile Gly Leu Trp Ser Phe Asp Leu Thr Val Thr
 275 280 285
 Gln Leu Leu Gln Glu Asn Val Ile Glu Ser Glu Arg Gly Ile Ile Asn
 290 295 300
 Gly Val Gln Asn Ser Met Asn Tyr Leu Leu Asp Leu Leu His Phe Ile
 305 310 315 320
 Met Val Ile Leu Ala Pro Asn Pro Glu Ala Phe Gly Leu Leu Val Leu
 325 330 335
 Ile Ser Val Ser Phe Val Ala Met Gly His Ile Met Tyr Phe Arg Phe
 340 345 350
 Ala Gln Asn Thr Leu Gly Asn Lys Leu Phe Ala Cys Gly Pro Asp Ala
 355 360 365
 Lys Glu Val Arg Lys Glu Asn Gln Ala Asn Thr Ser Val Val Xaa
 370 375 380

60 (2) INFORMATION FOR SEQ ID NO: 454:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 186 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 454:

-5

10

15

20

25

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35

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45

Met Arg Ser Ile Gly Asn Lys Asn Thr Ile Leu Leu Gly Leu Gly Phe
1 5 10 15

Gln Ile Leu Gln Leu Ala Trp Tyr Gly Phe Gly Ser Glu Pro Trp Met
20 25 30

Met Trp Ala Ala Gly Ala Val Ala Ala Met Ser Ser Ile Thr Phe Pro
35 40 45

Ala Val Ser Ala Leu Val Ser Arg Thr Ala Asp Ala Asp Gln Gln Gly
50 55 60

Val Val Gln Gly Met Ile Thr Gly Ile Arg Gly Leu Cys Asn Gly Leu
65 70 75 80

Gly Pro Ala Leu Tyr Gly Phe Ile Phe Tyr Ile Phe His Val Glu Leu
85 90 95

Lys Glu Leu Pro Ile Thr Gly Thr Asp Leu Gly Thr Asn Thr Ser Pro
100 105 110

Gln His His Phe Glu Gln Asn Ser Ile Ile Pro Gly Pro Pro Phe Leu
115 120 125

Phe Gly Ala Cys Ser Val Leu Leu Ala Leu Leu Val Ala Leu Phe Ile
130 135 140

Pro Glu His Thr Asn Leu Ser Leu Arg Ser Ser Ser Trp Arg Lys His
145 150 155 160

Cys Gly Ser His Ser His Pro His Asn Thr Gln Ala Pro Gly Glu Ala
165 170 175

Lys Glu Pro Leu Leu Gln Asp Thr Asn Val
180 185

(2) INFORMATION FOR SEQ ID NO: 455:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 163 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 455:

50

55

Met Leu Gln Thr Ser Asn Tyr Ser Leu Val Leu Ser Leu Gln Phe Leu
1 5 10 15

Leu Leu Ser Tyr Asp Leu Phe Val Asn Ser Phe Ser Glu Leu Leu Gln
20 25 30

60

Lys Thr Pro Val Ile Gln Leu Val Leu Phe Ile Ile Gln Asp Ile Ala

35 40 45

Val Leu Phe Asn Ile Ile Ile Ile Phe Leu Met Phe Phe Asn Thr Phe
50 55 60

-5 Val Phe Gln Ala Gly Leu Val Asn Leu Leu Phe His Lys Phe Lys Gly
65 70 75 80

10 Thr Ile Ile Leu Thr Ala Val Tyr Phe Ala Leu Ser Ile Ser Leu His
85 90 95

Val Trp Val Met Asn Leu Arg Trp Lys Asn Ser Asn Ser Phe Ile Trp
100 105 110

15 Thr Asp Gly Leu Gln Met Leu Phe Val Phe Gln Arg Leu Ala Ala Val
115 120 125

Leu Tyr Cys Tyr Phe Tyr Lys Arg Thr Ala Val Arg Leu Gly Asp Pro
130 135 140

20 His Phe Tyr Gln Asp Ser Leu Trp Leu Arg Lys Glu Phe Met Gln Val
145 150 155 160

Arg Arg Xaa

25

30 (2) INFORMATION FOR SEQ ID NO: 456:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 46 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 456:

Met Arg Ile Gln Val Phe Ile Leu Leu Leu Gly Ala Gly Gly Thr Ser
1 5 10 15

40 Gln Phe Thr Lys Pro Pro Ser Leu Pro Leu Glu Pro Glu Pro Ala Val
20 25 30

Glu Ser Ser Pro Thr Glu Thr Ser Glu Gln Ile Arg Glu Lys
35 40 45

45

(2) INFORMATION FOR SEQ ID NO: 457:

50 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 105 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 457:

Met Ser Tyr Leu Ala Phe Leu Tyr Met Thr Phe Asp Phe Cys Cys Leu
1 5 10 15

60 Tyr Phe Ser Thr Val Tyr Ala Pro Ser Phe Lys Tyr Ile Cys Val His
20 25 30

Thr Asp Thr His Ile Cys Val Cys Val Cys Ile Tyr Leu Ser Ser Val
 35 40 45
 -5 Val Ser Lys Ser Ser Ala Glu Ala Asp Gly Val Leu Gln Pro Arg Arg
 50 55 60
 His Pro Ala Ser Leu Leu Ile Val Phe Ala Thr Ser Ile Ser Glu Ser
 10 65 70 75 80
 Ser Leu Leu Ile Phe Ser Phe Gln Lys Thr Glu Ala Lys Leu Ile Val
 85 90 95
 Phe Ala Val Ser Leu Ala Ala Lys Xaa
 15 100 105

20 (2) INFORMATION FOR SEQ ID NO: 458:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 70 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 458:

Met Leu Pro Pro Phe Ser Leu Val Tyr Thr His Phe Leu Val Ala Ser
 1 5 10 15
 30 Leu Leu Pro Val Ile Leu Ala Val Phe Pro Asp Ser Ala Gln Ile Val
 20 25 30
 Pro Leu Leu Lys Pro Ile Pro Arg Pro Gln Pro Glu Val Ile Phe Pro
 35 40 45
 35 Ser Ser Glu Leu Leu Glu Gln Leu Leu Ser Val Gln Phe Val Trp Gln
 50 55 60
 Ala His Thr Val Ala Xaa
 40 65 70

45 (2) INFORMATION FOR SEQ ID NO: 459:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 155 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 459:

Met Ala Leu Leu Leu Ser Val Leu Arg Val Leu Leu Gly Gly Phe Phe
 1 5 10 15
 55 Ala Leu Val Gly Leu Ala Lys Leu Ser Glu Glu Ile Ser Ala Pro Val
 20 25 30
 Ser Glu Arg Met Asn Ala Leu Phe Val Gln Phe Ala Glu Val Phe Pro
 35 40 45
 60

Leu Lys Val Phe Gly Tyr Gln Pro Asp Pro Leu Asn Tyr Gln Ile Ala
 50 55 60
 Val Gly Phe Leu Glu Leu Leu Ala Gly Leu Leu Leu Val Met Gly Pro
 5 65 70 75 80
 Pro Met Leu Gln Glu Ile Ser Asn Leu Phe Leu Ile Leu Leu Met Met
 85 90 95
 10 Gly Ala Ile Phe Thr Leu Ala Ala Leu Lys Glu Ser Leu Ser Thr Cys
 100 105 110
 Ile Pro Ala Ile Val Cys Leu Gly Phe Leu Leu Leu Leu Asn Val Gly
 115 120 125
 15 Gln Leu Leu Ala Gln Thr Lys Lys Val Val Arg Pro Thr Arg Lys Lys
 130 135 140
 Thr Leu Ser Thr Phe Lys Glu Ser Trp Lys Xaa
 20 145 150 155

25 (2) INFORMATION FOR SEQ ID NO: 460:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 332 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 460:

Met Lys Leu Gly Arg Ala Val Leu Gly Leu Leu Leu Ala Pro Ser
 1 5 10 15
 35 Val Val Gln Ala Val Glu Pro Ile Ser Leu Gly Leu Ala Leu Ala Gly
 20 25 30
 Val Leu Thr Gly Tyr Ile Tyr Pro Arg Leu Tyr Cys Leu Phe Ala Glu
 35 40 45
 40 Cys Cys Gly Gln Lys Arg Ser Leu Ser Arg Glu Ala Leu Gln Lys Asp
 50 55 60
 Leu Asp Asp Asn Leu Phe Gly Gln His Leu Ala Lys Lys Ile Ile Leu
 45 65 70 75 80
 Asn Ala Val Phe Gly Phe Ile Asn Asn Pro Lys Pro Lys Lys Pro Leu
 85 90 95
 50 Thr Leu Ser Leu His Gly Trp Thr Gly Thr Gly Lys Asn Phe Val Ser
 100 105 110
 Lys Ile Ile Ala Glu Asn Ile Tyr Glu Gly Gly Leu Asn Ser Asp Tyr
 115 120 125
 55 Val His Leu Phe Val Ala Thr Leu His Phe Pro His Ala Ser Asn Ile
 130 135 140
 Thr Leu Tyr Lys Asp Gln Leu Gln Leu Trp Ile Arg Gly Asn Val Ser
 60 145 150 155 160

630

Ala Cys Ala Arg Ser Ile Phe Ile Phe Asp Glu Met Asp Lys Met His
 165 170 175

- 5 Ala Gly Leu Ile Asp Ala Ile Lys Pro Phe Leu Asp Tyr Tyr Asp Leu
 180 185 190

Val Asp Gly Val Ser Tyr Gln Lys Ala Met Phe Ile Phe Leu Ser Asn
 195 200 205

10 Ala Gly Ala Glu Arg Ile Thr Asp Val Ala Leu Asp Phe Trp Arg Ser
 210 215 220

Gly Lys Gln Arg Glu Asp Ile Lys Leu Lys Asp Ile Glu His Ala Leu
 15 225 230 235 240

Ser Val Ser Val Phe Asn Asn Lys Asn Ser Gly Phe Trp His Ser Ser
 245 250 255

20 Leu Ile Asp Arg Asn Leu Ile Asp Tyr Phe Val Pro Phe Leu Pro Leu
 260 265 270

Glu Tyr Lys His Leu Lys Met Cys Ile Arg Val Glu Met Gln Ser Arg
 275 280 285

25 Gly Tyr Glu Ile Asp Glu Asp Ile Val Ser Arg Val Ala Glu Glu Met
 290 295 300

Thr Phe Phe Pro Lys Glu Glu Arg Val Phe Ser Asp Lys Gly Cys Lys
 30 305 310 315 320

Thr Val Phe Thr Lys Leu Asp Tyr Tyr Tyr Asp Asp
 325 330

35

(2) INFORMATION FOR SEQ ID NO: 461:

- (i) SEQUENCE CHARACTERISTICS:
- 40 (A) LENGTH: 5 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 461:

45 Met Leu Lys Cys Ile
 1 5

50 (2) INFORMATION FOR SEQ ID NO: 462:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 14 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
- 55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 462:

Met Ile Leu Thr Leu Leu Ser Val Val Ser Thr Met Ala Ser
 1 5 10

60

(2) INFORMATION FOR SEQ ID NO: 463:

-5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 285 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 463:

10

Met Lys Leu His Pro Pro Pro Pro Ser Pro Val Thr Gln Asp His Arg
 1 5 10 15

15

Ser Lys Ser Ser His Ser Asn Trp Met Pro Arg Met Gly Ala Cys Ser
 20 25 30

Met Ser Arg Thr Ser Ser Ser Gly Pro Pro Ser Leu Cys Lys Ser Thr
 35 40 45

20

Ser Gly Arg Ser Cys Thr Arg Pro His Cys Trp Pro Ser Leu Pro Ala
 50 55 60

Trp Val Ser Val Phe Thr Arg Thr Asn Thr Gly Ser Trp Cys Tyr Pro
 65 70 75 80

25

Ala Trp Gly Gly Ala Phe Ser Arg Pro Trp Met Ser Ala Gln Ser Met
 85 90 95

30

Cys Cys Ala Glu Arg Ser Val Leu Gln Val Ala Cys Arg Leu Leu Asp
 100 105 110

Ala Leu Glu Phe Leu His Glu Asn Glu Tyr Val His Gly Asn Val Thr
 115 120 125

35

Ala Glu Asn Ile Phe Val Asp Pro Glu Asp Gln Ser Gln Val Thr Leu
 130 135 140

Ala Gly Tyr Gly Phe Ala Phe Arg Tyr Cys Pro Ser Gly Lys His Val
 145 150 155 160

40

Ala Tyr Val Glu Gly Ser Arg Ser Pro His Glu Gly Asp Leu Glu Phe
 165 170 175

45

Ile Ser Met Asp Leu His Lys Gly Cys Gly Pro Ser Arg Arg Xaa Asp
 180 185 190

Leu Gln Ser Leu Gly Tyr Cys Met Leu Lys Trp Leu Tyr Gly Phe Leu
 195 200 205

50

Pro Trp Thr Asn Cys Leu Pro Xaa Xaa Glu Asp Ile Met Lys Gln Lys
 210 215 220

Gln Lys Phe Val Asp Lys Pro Gly Pro Phe Val Gly Pro Cys Gly His
 225 230 235 240

55

Trp Ile Arg Pro Ser Glu Thr Leu Gln Lys Tyr Leu Lys Val Val Met
 245 250 255

60

Ala Leu Thr Tyr Glu Glu Lys Pro Pro Tyr Ala Met Leu Arg Asn Asn
 260 265 270

- Leu Glu Ala Leu Leu Gln Asp Leu Arg Val Ser Pro Tyr
 275 280 285
- 5
- (2) INFORMATION FOR SEQ ID NO: 464:
- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 80 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 464:
- Met Thr Ser Pro Pro Pro His Gln Gly Trp Glu Gln Arg Gly Cys Gly
 1 5 10 15
- Glu Ser Gln Val Pro Leu Ala Leu Ser Arg Val Phe Ser Thr Ser His
 20 25 30
- Tyr Cys Leu Leu Leu Val Ala Asn Gln Ser Ile Phe Phe Pro Cys Leu
 35 40 45
- Trp Ala Val Glu Arg Leu Leu Gly Val Arg Cys Thr Cys Pro Leu Ser
 50 55 60
- Trp Gly Lys Arg Ile Ile Ser Glu His Cys Ser Ala Gln Ser Ser Xaa
 65 70 75 80
- 30
- (2) INFORMATION FOR SEQ ID NO: 465:
- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 47 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 465:
- Met His Thr Trp Tyr Asn Asp Arg Arg Gln Asn Cys His Cys Leu Leu
 1 5 10 15
- Phe Phe Leu Ile Tyr Leu Arg Lys Ile Tyr Gln Val Val Pro His Val
 20 25 30
- Pro Leu Leu Val Lys Cys Arg Gly Arg Leu Lys Gly Val Asn Ile
 35 40 45
- 50
- (2) INFORMATION FOR SEQ ID NO: 466:
- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 96 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 466:

Met Glu Leu Val Leu Val Phe Leu Cys Ser Leu Leu Ala Pro Met Val
 1 5 10 15
 5 Leu Ala Ser Ala Ala Glu Lys Glu Lys Glu Met Asp Pro Phe His Tyr
 20 25 30
 Asp Tyr Gln Thr Leu Arg Ile Gly Gly Leu Val Phe Ala Val Val Leu
 35 40 45
 10 Phe Ser Val Gly Ile Leu Leu Ile Leu Ser Arg Arg Cys Lys Cys Ser
 50 55 60
 Phe Asn Gln Lys Pro Arg Ala Pro Gly Asp Glu Glu Ala Gln Val Glu
 65 70 75 80
 15 Asn Leu Ile Thr Ala Asn Ala Thr Glu Pro Gln Lys Ala Glu Asn Xaa
 85 90 95
 20
 25 (2) INFORMATION FOR SEQ ID NO: 467:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 399 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 467:
 Met Ala Ser Gly Ala Asp Ser Lys Gly Asp Asp Leu Ser Thr Ala Ile
 1 5 10 15
 35 Leu Lys Gln Lys Asn Arg Pro Asn Arg Leu Ile Val Asp Glu Ala Ile
 20 25 30
 Asn Glu Asp Asn Ser Val Val Ser Leu Ser Gln Pro Lys Met Asp Glu
 35 40 45
 40 Leu Gln Leu Phe Arg Gly Asp Thr Val Leu Leu Lys Gly Lys Lys Arg
 50 55 60
 Arg Glu Ala Val Cys Ile Val Leu Ser Asp Asp Thr Cys Ser Asp Glu
 65 70 75 80
 45 Lys Ile Arg Met Asn Arg Val Val Arg Asn Asn Leu Arg Val Arg Leu
 85 90 95
 50 Gly Asp Val Ile Ser Ile Gln Pro Cys Pro Asp Val Lys Tyr Gly Lys
 100 105 110
 Arg Ile His Val Leu Pro Ile Asp Asp Thr Val Glu Gly Ile Thr Gly
 115 120 125
 55 Asn Leu Phe Glu Val Tyr Leu Lys Pro Tyr Phe Leu Glu Ala Tyr Arg
 130 135 140
 60 Pro Ile Arg Lys Gly Asp Ile Phe Leu Val Arg Gly Gly Met Arg Ala

634

145 150 155 160
 Val Glu Phe Lys Val Val Glu Thr Asp Pro Ser Pro Tyr Cys Ile Val
 165 170 175
 -5 Ala Pro Asp Thr Val Ile His Cys Glu Gly Glu Pro Ile Lys Arg Glu
 180 185 190
 10 Asp Glu Glu Glu Ser Leu Asn Glu Val Gly Tyr Asp Asp Ile Gly Gly
 195 200 205
 Cys Arg Lys Gln Leu Ala Gln Ile Lys Glu Met Val Glu Leu Pro Leu
 210 215 220
 15 Arg His Pro Ala Leu Phe Lys Ala Ile Gly Val Lys Pro Pro Arg Gly
 225 230 235 240
 Ile Leu Leu Tyr Gly Pro Pro Gly Thr Gly Lys Thr Leu Ile Ala Arg
 245 250 255
 20 Ala Val Ala Asn Glu Thr Gly Ala Phe Phe Phe Leu Ile Asn Gly Pro
 260 265 270
 Glu Ile Met Ser Lys Leu Ala Gly Glu Ser Glu Ser Asn Leu Arg Lys
 25 275 280 285
 Ala Phe Glu Glu Ala Glu Lys Asn Ala Pro Ala Ile Ile Phe Ile Asp
 290 295 300
 30 Glu Leu Asp Ala Ile Ala Pro Lys Arg Glu Lys Thr His Gly Glu Val
 305 310 315 320
 Glu Arg Arg Ile Val Ser Gln Leu Leu Thr Leu Met Asp Gly Leu Lys
 325 330 335
 35 Gln Arg Ala His Val Ile Val Met Ala Ala Thr Asn Arg Pro Asn Ser
 340 345 350
 Ile Asp Pro Ala Leu Arg Arg Phe Gly Arg Phe Asp Arg Glu Val Asp
 40 355 360 365
 Ile Gly Ile Pro Asp Ala Thr Gly Arg Leu Glu Ile Leu Gln Ile His
 370 375 380
 45 Thr Lys Asn Met Lys Leu Ala Asp Asp Val Asp Leu Glu Gln Xaa
 385 390 395

50 (2) INFORMATION FOR SEQ ID NO: 468:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1 amino acids

(B) TYPE: amino acid

55 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 468:

Leu

1

60

(2) INFORMATION FOR SEQ ID NO: 469:

-5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 273 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 469:

10

Met Ala Ala Pro Lys Gly Ser Leu Trp Val Arg Thr Gln Leu Gly Leu
 1 5 10 15

15

Pro Pro Leu Leu Leu Leu Thr Met Ala Leu Ala Gly Gly Ser Gly Thr
 20 25 30

Ala Ser Ala Glu Ala Phe Asp Ser Val Leu Gly Asp Thr Ala Ser Cys
 35 40 45

20

His Arg Ala Cys Gln Leu Thr Tyr Pro Leu His Thr Tyr Pro Lys Glu
 50 55 60

Glu Glu Leu Tyr Ala Cys Gln Arg Gly Cys Arg Leu Phe Ser Ile Cys
 65 70 75 80

25

Gln Phe Val Asp Asp Gly Ile Asp Leu Asn Arg Thr Lys Leu Glu Cys
 85 90 95

30

Glu Ser Ala Cys Thr Glu Ala Tyr Ser Gln Ser Asp Glu Gln Tyr Ala
 100 105 110

Cys His Leu Gly Cys Gln Asn Gln Leu Pro Phe Ala Glu Leu Arg Gln
 115 120 125

35

Glu Gln Leu Met Ser Leu Met Pro Lys Met His Leu Leu Phe Pro Leu
 130 135 140

Thr Leu Val Arg Ser Phe Trp Ser Asp Met Met Asp Ser Ala Gln Ser
 145 150 155 160

40

Phe Ile Thr Ser Ser Trp Thr Phe Tyr Leu Gln Ala Asp Asp Gly Lys
 165 170 175

Ile Val Ile Phe Xaa Ser Lys Pro Arg Asn Pro Arg Tyr Ala Pro His
 180 185 190

45

Leu Glu Pro Gly Ala Leu Pro Asn Leu Xaa Xaa Xaa Ser Leu Ser Lys
 195 200 205

50

Met Ser Xaa Xaa Ser Xaa Met Arg Asn Ser Gln Ala His Arg Asn Phe
 210 215 220

Leu Glu Asp Gly Glu Ser Asp Gly Phe Leu Arg Cys Leu Ser Leu Asn
 225 230 235 240

55

Ser Gly Trp Ile Leu Thr Thr Thr Leu Val Leu Ser Val Met Val Leu
 245 250 255

60

Leu Trp Ile Cys Cys Ala Thr Cys Cys Tyr Thr Leu Leu Asp Ala Val
 260 265 270

Xaa

5

(2) INFORMATION FOR SEQ ID NO: 470:

10 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 192 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 470:

15 Met Met Val Leu Ser Leu Gly Ile Ile Leu Ala Ser Ala Ser Phe Ser
 1 5 10 15

Pro Asn Phe Thr Gln Val Thr Ser Thr Leu Leu Asn Ser Ala Tyr Pro
 20 25 30

20 Phe Ile Gly Pro Phe Phe Phe Ile Ile Ser Gly Ser Leu Ser Ile Ala
 35 40 45

25 Thr Glu Lys Arg Leu Thr Lys Leu Leu Val His Ser Ser Leu Val Gly
 50 55 60

Ser Ile Leu Ser Ala Leu Ser Ala Leu Val Gly Phe Ile Ile Leu Ser
 65 70 75 80

30 Val Lys Gln Ala Thr Leu Asn Pro Ala Ser Leu Gln Cys Glu Leu Asp
 85 90 95

Lys Asn Asn Ile Pro Thr Arg Ser Tyr Val Ser Tyr Phe Tyr His Asp
 100 105 110

35 Ser Leu Tyr Thr Thr Asp Cys Tyr Thr Ala Lys Ala Ser Leu Ala Gly
 115 120 125

40 Xaa Leu Ser Leu Met Leu Ile Cys Thr Leu Leu Glu Phe Cys Leu Ala
 130 135 140

Val Leu Thr Ala Val Leu Arg Trp Lys Gln Ala Tyr Ser Asp Phe Pro
 145 150 155 160

45 Gly Ser Val Leu Phe Leu Pro His Ser Tyr Ile Gly Asn Ser Gly Met
 165 170 175

Ser Ser Lys Met Thr His Asp Cys Gly Tyr Glu Glu Leu Leu Thr Ser
 180 185 190

50

55

(2) INFORMATION FOR SEQ ID NO: 471:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 234 amino acids

60 (B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 471:

-5 Met Arg Lys Thr Arg Leu Trp Gly Leu Leu Trp Met Leu Phe Val Ser
1 5 10 15

Glu Leu Arg Ala Ala Thr Lys Leu Thr Glu Glu Lys Tyr Glu Leu Lys
20 25 30

10 Glu Gly Gln Thr Leu Asp Val Lys Cys Asp Tyr Thr Leu Glu Lys Phe
35 40 45

Ala Ser Ser Gln Lys Ala Trp Gln Ile Ile Arg Asp Gly Glu Met Pro
50 55 60

15 Lys Thr Leu Ala Cys Thr Glu Arg Pro Ser Lys Asn Ser His Pro Val
65 70 75 80

20 Gln Val Gly Arg Ile Ile Leu Glu Asp Tyr His Asp His Gly Leu Leu
85 90 95

Arg Val Arg Met Val Asn Leu Gln Val Glu Asp Ser Gly Leu Tyr Gln
100 105 110

25 Cys Val Ile Tyr Gln Pro Pro Lys Glu Pro His Met Leu Phe Asp Arg
115 120 125

Ile Arg Leu Val Val Thr Lys Gly Phe Ser Gly Thr Pro Gly Ser Asn
130 135 140

30 Glu Asn Ser Thr Gln Asn Val Tyr Lys Ile Pro Pro Thr Thr Thr Lys
145 150 155 160

35 Ala Leu Cys Pro Leu Tyr Thr Ser Pro Arg Thr Val Thr Gln Ala Pro
165 170 175

Pro Lys Ser Thr Ala Asp Val Ser Thr Pro Asp Ser Glu Ile Asn Leu
180 185 190

40 Thr Asn Val Thr Asp Ile Ile Arg Val Pro Val Phe Asn Ile Val Ile
195 200 205

Leu Leu Ala Gly Gly Phe Leu Ser Lys Ser Leu Val Phe Ser Val Leu
210 215 220

45 Phe Ala Val Thr Leu Arg Ser Phe Val Pro
225 230

50

(2) INFORMATION FOR SEQ ID NO: 472:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 105 amino acids

55

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 472:

60 Met Leu His Ile Leu Pro Leu Lys Ser Tyr Asp Phe Pro His Phe Ser
1 5 10 15

25 (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 32 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 473:

40 (2) INFORMATION FOR SEQ ID NO: 474:

(i) SEQUENCE CHARACTERISTICS:

45 (A) LENGTH: 571 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 474:

50 Met Ala Leu Ser Arg Gly Leu Pro Arg Glu Leu Ala Glu Ala Val Ala
1 5 10 15

Gly Gly Arg Val Leu Val Val Gly Ala Gly Gly Ile Gly Cys Glu Leu
20 25 30

55 Leu Lys Asn Leu Val Leu Thr Gly Phe Ser His Ile Asp Leu Ile Asp
35 40 45

Leu Asp Thr Ile Asp Val Ser Asn Leu Asn Arg Gln Phe Leu Phe Gln
50 55 60

Lys Lys His Val Gly Arg Ser Lys Ala Gln Val Ala Lys Glu Ser Val
 65 70 75 80
 5 Leu Gln Phe Tyr Pro Lys Ala Asn Ile Val Ala Tyr His Asp Ser Ile
 85 90 95
 Met Asn Pro Asp Tyr Asn Val Glu Phe Phe Arg Gln Phe Ile Leu Val
 100 105 110
 10 Met Asn Ala Leu Asp Asn Arg Ala Ala Arg Asn His Val Asn Arg Met
 115 120 125
 Cys Leu Ala Ala Asp Val Pro Leu Ile Glu Ser Gly Thr Ala Gly Tyr
 130 135 140
 15 Leu Gly Gln Val Thr Thr Ile Lys Lys Gly Val Thr Glu Cys Tyr Glu
 145 150 155 160
 Cys His Pro Lys Pro Thr Gln Arg Thr Phe Pro Gly Cys Thr Ile Arg
 165 170 175
 20 Asn Thr Pro Ser Glu Pro Ile His Cys Ile Val Trp Ala Lys Tyr Leu
 180 185 190
 25 Phe Asn Gln Leu Phe Gly Glu Glu Asp Ala Asp Gln Glu Val Ser Pro
 195 200 205
 Asp Arg Ala Asp Pro Glu Ala Ala Trp Glu Pro Thr Glu Ala Glu Ala
 210 215 220
 30 Arg Ala Arg Ala Ser Asn Glu Asp Gly Asp Ile Lys Arg Ile Ser Thr
 225 230 235 240
 Lys Glu Trp Ala Lys Ser Thr Gly Tyr Asp Pro Val Lys Leu Phe Thr
 245 250 255
 35 Lys Leu Phe Lys Asp Asp Ile Arg Tyr Leu Leu Thr Met Asp Lys Leu
 260 265 270
 40 Trp Arg Lys Arg Lys Pro Pro Val Pro Leu Asp Trp Ala Glu Val Gln
 275 280 285
 Ser Gln Gly Glu Glu Thr Asn Ala Ser Asp Gln Gln Asn Glu Pro Gln
 290 295 300
 45 Leu Gly Leu Lys Asp Gln Gln Val Leu Asp Val Lys Ser Tyr Ala Arg
 305 310 315 320
 Leu Phe Ser Lys Ser Ile Glu Thr Leu Arg Val His Leu Ala Glu Lys
 325 330 335
 Gly Asp Gly Ala Glu Leu Ile Trp Asp Lys Asp Asp Pro Ser Ala Met
 340 345 350
 55 Asp Phe Val Thr Ser Ala Ala Asn Leu Arg Met His Ile Phe Ser Met
 355 360 365
 Asn Met Lys Ser Arg Phe Asp Ile Lys Ser Met Ala Gly Asn Ile Ile
 370 375 380
 60

Pro Ala Ile Ala Thr Thr Asn Ala Val Ile Ala Gly Leu Ile Val Leu
 385 390 395 400
 5 Glu Gly Leu Lys Ile Leu Ser Gly Lys Ile Asp Gln Cys Arg Thr Ile
 405 410 415
 Phe Leu Asn Lys Gln Pro Asn Pro Arg Lys Lys Leu Leu Val Pro Cys
 420 425 430
 10 Ala Leu Asp Pro Pro Asn Pro Asn Cys Tyr Val Cys Ala Ser Lys Pro
 435 440 445
 Glu Val Thr Val Arg Leu Asn Val His Lys Val Thr Val Leu Thr Leu
 450 455 460
 15 Gln Asp Lys Ile Val Lys Glu Lys Phe Ala Met Val Ala Pro Asp Val
 465 470 475 480
 Gln Ile Glu Asp Gly Lys Gly Thr Ile Leu Ile Ser Ser Glu Glu Gly
 485 490 495
 20 Glu Thr Glu Ala Asn Asn His Lys Lys Leu Ser Glu Phe Gly Ile Arg
 500 505 510
 25 Asn Gly Ser Arg Leu Gln Ala Asp Asp Phe Leu Gln Asp Tyr Thr Leu
 515 520 525
 Leu Ile Asn Ile Leu His Ser Glu Asp Leu Gly Lys Asp Val Glu Phe
 530 535 540
 30 Glu Val Val Gly Asp Ala Pro Glu Lys Val Gly Xaa Lys Gln Ala Glu
 545 550 555 560
 35 Asp Ala Ala Lys Ser Ile Thr Asn Gly Gln Xaa
 565 570

40 (2) INFORMATION FOR SEQ ID NO: 475:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 312 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 475:

Met Gln Val Val Thr Cys Leu Thr Arg Asp Ser Tyr Leu Thr His Cys
 1 5 10 15
 50 Phe Leu Gln His Leu Met Val Val Leu Ser Ser Leu Glu Arg Thr Pro
 20 25 30
 Ser Pro Glu Pro Val Asp Lys Asp Phe Tyr Ser Glu Phe Gly Asn Lys
 35 40 45
 55 Thr Thr Gly Lys Met Glu Asn Tyr Glu Leu Ile His Ser Ser Arg Val
 50 55 60
 60 Lys Phe Thr Tyr Pro Ser Glu Glu Glu Ile Gly Asp Leu Thr Phe Thr
 65 70 75 80

Val Ala Gln Lys Met Ala Glu Pro Glu Lys Ala Pro Ala Leu Ser Ile
85 90 95

5 Leu Leu Tyr Val Gln Ala Phe Gln Val Gly Met Pro Pro Pro Gly Cys
100 105 110

Cys Arg Gly Pro Leu Arg Pro Lys Thr Leu Leu Leu Thr Ser Ser Glu
115 120 125

10 Ile Phe Leu Leu Asp Glu Asp Cys Val His Tyr Pro Leu Pro Glu Phe
130 135 140

Ala Lys Glu Pro Pro Gln Arg Asp Arg Tyr Arg Leu Asp Asp Gly Arg
145 150 155 160

15 Arg Val Arg Asp Leu Asp Arg Val Leu Met Gly Tyr Gln Thr Tyr Pro
165 170 175

20 Gln Pro Ser Pro Ser Ser Ser Met Thr Cys Lys Val Met Thr Ser Trp
180 185 190

Ala Val Ser Pro Trp Thr Thr Leu Gly Arg Cys Gln Val Ala Arg Leu
195 200 205

25 Glu Pro Ala Arg Ala Val Lys Ser Ser Gly Arg Cys Leu Ser Pro Val
210 215 220

Leu Arg Ala Glu Arg Ser Ser Ser Arg Cys Trp Leu Ala Ser Gly Arg
225 230 235 240

30 Pro Cys Val Ala Val Ser Cys Leu Ser Ser Ser Pro Ala Ser Pro Gly
245 250 255

35 His Ser Gln Pro Val Val Ser Ser Leu Thr Pro Thr Gly Ala Gly Gln
260 265 270

Gln Ala Phe Val Phe Ser Lys Asn Val Leu Ser Ser Leu Trp Tyr Leu
275 280 285

40 Asn Leu Thr Val Leu Ala Glu Asn Val Asn Met Cys Val Cys Cys Val
290 295 300

Asn Ser Phe Ser Cys Trp Glu Xaa
305 310

45

(2) INFORMATION FOR SEQ ID NO: 476:

50

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 329 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

55

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 476:

Met Ala Gln His His Leu Trp Ile Leu Leu Leu Cys Leu Gln Thr Trp
1 5 10 15

60 Pro Glu Ala Ala Gly Lys Asp Ser Glu Ile Phe Thr Val Asn Gly Ile

(2) INFORMATION FOR SEQ ID NO: 477:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 178 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 477:

10 Met Lys Leu Gln Cys Val Ser Leu Trp Leu Leu Gly Thr Ile Leu Ile
1 5 10 15

Leu Cys Ser Val Asp Asn His Gly Leu Arg Arg Cys Leu Ile Ser Thr
20 25 30

15 Asp Met His His Ile Glu Glu Ser Phe Gln Glu Ile Lys Arg Ala Ile
35 40 45

Gln Ala Lys Asp Thr Phe Pro Asn Val Thr Ile Leu Ser Thr Leu Glu
20 50 55 60

Thr Leu Gln Ile Ile Lys Pro Leu Asp Val Cys Cys Val Thr Lys Asn
65 70 75 80

25 Leu Leu Ala Phe Tyr Val Asp Arg Val Phe Lys Asp His Gln Glu Pro
85 90 95

Asn Pro Lys Ile Leu Arg Lys Ile Ser Ser Ile Ala Asn Ser Phe Leu
100 105 110

30 Tyr Met Gln Lys Thr Leu Arg Gln Cys Gln Glu Gln Arg Gln Cys His
115 120 125

Cys Arg Gln Glu Ala Thr Asn Ala Thr Arg Val Ile His Asp Asn Tyr
35 130 135 140

Asp Gln Leu Glu Val His Ala Ala Ala Ile Lys Ser Leu Gly Glu Leu
145 150 155 160

40 Asp Val Phe Leu Ala Trp Ile Asn Lys Asn His Glu Val Met Ser Ser
165 170 175

Ala Xaa

45

(2) INFORMATION FOR SEQ ID NO: 478:

(i) SEQUENCE CHARACTERISTICS:

- 50 (A) LENGTH: 52 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 478:

55

Asp Thr Ala Ile Arg Val Ala Leu Ala Val Ala Val Leu Lys Thr Val
1 5 10 15

Ile Leu Gly Leu Leu Cys Leu Leu Leu Cys Gly Gly Gly Glu Gly Lys
20 25 30

60

Val Ala Gly Arg Gln Ala Val Thr Ser Asp Gln Gln Ser Val Gly Arg
 35 40 45

-5 Arg Asp Val Tyr
 50

10 (2) INFORMATION FOR SEQ ID NO: 479:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 62 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

15 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 479:

Met Gln Lys Lys Asn Ser Leu Phe Phe Phe Phe Ala Phe Tyr Tyr Glu
 1 5 10 15

20 Asn Lys Thr Asn Ala Pro Gly Glu Gly Ser Met Ile Thr Arg Asn Ile
 20 25 30

25 Lys Glu Tyr Phe Leu Pro Phe Leu Phe Cys Cys Val Glu Ala Ser Ile
 35 40 45

Ala Ile Asn Lys Leu Asn Tyr Leu His Trp Thr His Phe Gln
 50 55 60

30

(2) INFORMATION FOR SEQ ID NO: 480:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 27 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 480:

40 Met Pro Gly Leu Ser Leu Ile Leu Thr Val Thr Leu Leu Ala Val Ser
 1 5 10 15

Asp Ser Ala Ala Thr Cys Ile Val Ala Lys Gly
 20 25

45

(2) INFORMATION FOR SEQ ID NO: 481:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 339 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 481:

55 Met Ser Gly Pro Asp Val Glu Thr Pro Ser Ala Ile Gln Ile Cys Arg
 1 5 10 15

Ile Met Arg Pro Asp Asp Ala Asn Val Ala Gly Asn Val His Gly Gly
 20 25 30

60

Thr Ile Leu Lys Met Ile Glu Glu Ala Gly Ala Ile Ile Ser Thr Arg
 35 40 45
 - 5 His Cys Asn Ser Gln Asn Gly Glu Arg Cys Val Ala Ala Leu Ala Arg
 50 55 60
 Val Glu Arg Thr Asp Phe Leu Ser Pro Met Cys Ile Gly Glu Val Ala
 65 70 75 80
 10 His Val Ser Ala Glu Ile Thr Tyr Thr Ser Lys His Ser Val Glu Val
 85 90 95
 Gln Val Asn Val Met Ser Glu Asn Ile Leu Thr Gly Ala Lys Lys Leu
 15 100 105 110
 Thr Asn Lys Ala Thr Leu Trp Tyr Val Pro Leu Ser Leu Lys Asn Val
 115 120 125
 20 Asp Lys Val Leu Glu Val Pro Pro Val Val Tyr Ser Arg Xaa Glu Gln
 130 135 140
 Glu Glu Glu Gly Arg Lys Arg Tyr Glu Ala Gln Lys Leu Glu Arg Met
 145 150 155 160
 25 Glu Thr Lys Trp Arg Asn Gly Asp Ile Val Gln Pro Val Leu Asn Pro
 165 170 175
 Glu Pro Asn Thr Val Ser Tyr Ser Gln Ser Ser Leu Ile His Leu Val
 180 185 190
 Gly Pro Ser Asp Cys Thr Leu His Gly Phe Val His Gly Gly Val Thr
 195 200 205
 35 Met Lys Leu Met Asp Glu Val Ala Gly Ile Val Ala Ala Arg His Cys
 210 215 220
 Lys Thr Asn Ile Val Thr Ala Ser Val Asp Ala Ile Asn Phe His Asp
 225 230 235 240
 40 Lys Ile Arg Lys Gly Cys Val Ile Thr Ile Ser Gly Arg Met Thr Phe
 245 250 255
 Thr Ser Asn Lys Ser Met Glu Ile Glu Val Leu Val Asp Ala Asp Pro
 260 265 270
 Val Val Asp Ser Ser Gln Lys Arg Tyr Arg Ala Ala Ser Ala Phe Phe
 275 280 285
 50 Thr Tyr Val Ser Leu Ser Gln Glu Gly Arg Ser Leu Pro Val Pro Gln
 290 295 300
 Leu Val Pro Glu Thr Glu Asp Glu Lys Lys Arg Phe Glu Glu Gly Lys
 305 310 315 320
 55 Gly Arg Tyr Leu Gln Met Lys Ala Lys Xaa Gln Gly His Ala Xaa Xaa
 325 330 335
 Gln Pro Xaa
 60

-5 (2) INFORMATION FOR SEQ ID NO: 482:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 32 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

10 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 482:

Met	Leu	Asn	Ser	Asn	Ile	Asn	Asp	Leu	Leu	Met	Val	Thr	Tyr	Leu	Ala
1				5				10						15	
Asn	Leu	Thr	Gln	Ser	Gln	Ile	Ala	Leu	Asn	Glu	Lys	Leu	Val	Asn	Leu
			20					25						30	

20

(2) INFORMATION FOR SEQ ID NO: 483:

25 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 48 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 483:

Met	Arg	Glu	Thr	Ser	Ile	Arg	Val	Leu	Leu	Met	Leu	Pro	Ala	Leu	Glu
1				5				10						15	
Ser	Thr	Ser	Gly	Leu	Ser	Ala	Phe	Met	Gly	Leu	Gly	Thr	Arg	Ile	Gly
			20					25						30	
Cys	Phe	Lys	Thr	Ile	Thr	Cys	Trp	Pro	Thr	Ser	Leu	Thr	Gln	Arg	Xaa
			35				40							45	

40

45 (2) INFORMATION FOR SEQ ID NO: 484:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 38 amino acids

(B) TYPE: amino acid

50 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 484:

Met	Tyr	Met	Tyr	Ser	Leu	Asn	Val	Phe	Leu	Ser	Phe	Ile	Phe	Leu	Ala
1				5				10						15	
Leu	Val	Phe	Lys	Cys	Val	His	Val	Cys	Gln	Gly	Ala	Asn	Ala	Phe	Leu
			20					25						30	
Phe	Leu	Lys	Leu	Val	Phe										
			35												

60

5 (2) INFORMATION FOR SEQ ID NO: 485:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 61 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

10 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 485:

Met Gly Leu Arg Leu Ile Cys Leu Glu Leu Thr Met Val Lys Ala Leu
1 5 10 15

15 Val Cys Glu Met Phe Leu Phe Phe Leu Met Thr Gln Lys Leu Ile Trp
20 25 30

Gln Glu Cys Thr Glu Lys Phe Ala Lys Leu Leu Val Gln Leu Ile Ser
35 40 45

20 Leu Val Phe Ala Trp Glu Phe Phe Ser Glu Asp Thr Pro
50 55 60

25 (2) INFORMATION FOR SEQ ID NO: 486:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 346 amino acids

30 (B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 486:

35 Met Leu Ala Ala Arg Leu Val Cys Leu Arg Thr Leu Pro Ser Arg Val
1 5 10 15

Phe His Pro Ala Phe Thr Lys Ala Ser Pro Val Val Lys Asn Ser Ile
20 25 30

40 Thr Lys Asn Gln Trp Leu Leu Thr Pro Ser Arg Glu Tyr Ala Thr Lys
35 40 45

Thr Arg Ile Gly Ile Arg Arg Gly Arg Thr Gly Gln Glu Leu Lys Glu
50 55 60

45 Ala Ala Leu Glu Pro Ser Met Glu Lys Ile Phe Lys Ile Asp Gln Met
65 70 75 80

50 Gly Arg Trp Phe Val Ala Gly Gly Ala Ala Val Gly Leu Gly Ala Leu
85 90 95

Cys Tyr Tyr Gly Leu Gly Leu Ser Asn Glu Ile Gly Ala Ile Glu Lys
100 105 110

55 Ala Val Ile Trp Pro Gln Tyr Val Lys Asp Arg Ile His Ser Thr Tyr
115 120 125

Met Tyr Leu Ala Gly Ser Ile Gly Leu Thr Ala Leu Ser Ala Ile Ala
130 135 140

60

648

Ile Ser Arg Thr Pro Val Leu Met Asn Phe Met Met Arg Gly Ser Trp
 145 150 155 160
 Val Thr Ile Gly Val Thr Phe Ala Ala Met Val Gly Ala Gly Met Leu
 -5 165 170 175
 Val Arg Ser Ile Pro Tyr Asp Gln Ser Pro Gly Pro Lys His Leu Ala
 180 185 190
 10 Trp Leu Leu His Ser Gly Val Met Gly Ala Val Val Ala Pro Leu Thr
 195 200 205
 Ile Leu Gly Gly Pro Leu Leu Ile Arg Ala Ala Trp Tyr Thr Ala Gly
 210 215 220
 15 Ile Val Gly Gly Leu Ser Thr Val Ala Met Cys Ala Pro Ser Glu Lys
 225 230 235 240
 Phe Leu Asn Met Gly Ala Pro Leu Gly Val Gly Leu Gly Leu Val Phe
 20 245 250 255
 Val Ser Ser Leu Gly Ser Met Phe Leu Pro Pro Thr Thr Val Ala Gly
 260 265 270
 25 Ala Thr Leu Tyr Ser Val Ala Met Tyr Gly Gly Leu Val Leu Phe Ser
 275 280 285
 Met Phe Leu Leu Tyr Asp Thr Gln Lys Val Ile Lys Arg Ala Glu Val
 290 295 300
 30 Ser Pro Met Tyr Gly Val Gln Lys Tyr Asp Pro Ile Asn Ser Met Leu
 305 310 315 320
 Ser Ile Tyr Met Asp Thr Leu Asn Ile Phe Met Arg Val Ala Thr Met
 35 325 330 335
 Leu Ala Thr Gly Gly Asn Arg Lys Lys Xaa
 340 345
 40

(2) INFORMATION FOR SEQ ID NO: 487:

(i) SEQUENCE CHARACTERISTICS:
 45 (A) LENGTH: 237 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 487:
 50 Met Glu Glu Val Leu Leu Leu Gly Leu Lys Asp Arg Glu Gly Tyr Thr
 1 5 10 15
 Ser Phe Trp Asn Asp Cys Ile Ser Ser Gly Leu Arg Gly Cys Met Leu
 20 25 30
 55 Ile Glu Leu Ala Leu Arg Gly Arg Leu Gln Leu Glu Ala Cys Gly Met
 35 40 45
 Arg Arg Lys Ser Leu Leu Thr Arg Lys Val Ile Cys Lys Ser Asp Ala
 60 50 55 60

Pro Thr Gly Asp Val Leu Leu Asp Glu Ala Leu Lys His Val Lys Glu
 65 70 75 80
 - 5 Thr Gln Pro Pro Glu Thr Val Gln Asn Trp Ile Glu Leu Leu Ser Gly
 85 90 95
 Glu Thr Trp Asn Pro Leu Lys Leu His Tyr Gln Leu Arg Asn Val Arg
 10 100 105 110
 Glu Arg Leu Ala Lys Asn Leu Val Glu Lys Gly Val Leu Thr Thr Glu
 115 120 125
 Lys Gln Asn Phe Leu Leu Phe Asp Met Thr Thr His Pro Leu Thr Asn
 15 130 135 140
 Asn Asn Ile Lys Gln Arg Leu Ile Lys Lys Val Gln Glu Ala Val Leu
 145 150 155 160
 20 Asp Lys Trp Val Asn Asp Pro His Arg Met Asp Arg Arg Leu Leu Ala
 165 170 175
 Leu Ile Tyr Leu Ala His Ala Ser Asp Val Leu Glu Asn Ala Phe Ala
 180 185 190
 25 Pro Leu Leu Asp Glu Gln Tyr Asp Leu Ala Thr Lys Arg Val Arg Gln
 195 200 205
 Leu Leu Asp Leu Asp Pro Glu Val Glu Cys Leu Lys Ala Asn Thr Asn
 30 210 215 220
 Glu Val Leu Trp Ala Val Val Ala Ala Phe Thr Lys Xaa
 225 230 235
 35
 (2) INFORMATION FOR SEQ ID NO: 488:
 (i) SEQUENCE CHARACTERISTICS:
 40 (A) LENGTH: 200 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 488:
 45 Met Ala Gln Arg Met Val Trp Val Asp Leu Glu Met Thr Gly Leu Asp
 1 5 10 15
 Ile Glu Lys Asp Gln Ile Ile Glu Met Ala Cys Leu Ile Thr Asp Ser
 20 25 30
 50 Asp Leu Asn Ile Leu Ala Glu Gly Pro Asn Leu Ile Ile Lys Gln Pro
 35 40 45
 Asp Glu Leu Leu Asp Ser Met Ser Asp Trp Cys Lys Glu His His Gly
 55 50 55 60
 Lys Ser Gly Leu Thr Lys Ala Val Lys Glu Ser Thr Ile Thr Leu Gln
 65 70 75 80
 60 Gln Ala Glu Tyr Glu Phe Leu Ser Phe Val Arg Gln Gln Thr Pro Pro

650

85 90 95

Gly Leu Cys Pro Leu Ala Gly Asn Ser Val His Glu Asp Lys Lys Phe
100 105 110

- 5 Leu Asp Lys Tyr Met Pro Gln Phe Met Lys His Leu His Tyr Arg Ile
115 120 125

10 Ile Asp Val Ser Thr Val Lys Glu Leu Cys Arg Arg Trp Tyr Pro Glu
130 135 140

Glu Tyr Glu Phe Ala Pro Lys Lys Ala Ala Ser His Arg Ala Leu Asp
145 150 155 160

15 Asp Ile Ser Glu Ser Ile Lys Glu Leu Gln Phe Tyr Arg Asn Asn Ile
165 170 175

Phe Lys Lys Lys Ile Asp Glu Lys Lys Arg Lys Ile Ile Glu Asn Gly
180 185 190

20 Glu Asn Glu Lys Thr Val Ser Xaa
195 200

25

(2) INFORMATION FOR SEQ ID NO: 489:

(i) SEQUENCE CHARACTERISTICS:

30

(A) LENGTH: 351 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 489:

35 Met Ala Thr Thr Ala Ala Pro Ala Gly Gly Ala Arg Asn Gly Ala Gly
1 5 10 15

Pro Glu Trp Gly Gly Phe Glu Glu Asn Ile Gln Gly Gly Gly Ser Ala
20 25 30

40 Val Ile Asp Met Glu Asn Met Asp Asp Thr Ser Gly Ser Ser Phe Glu
35 40 45

Asp Met Gly Glu Leu His Gln Arg Leu Arg Glu Glu Glu Val Asp Ala
50 55 60

45 Asp Ala Ala Asp Ala Ala Ala Ala Glu Glu Glu Asp Gly Glu Phe Leu
65 70 75 80

50 Gly Met Lys Gly Phe Lys Gly Gln Leu Ser Arg Gln Val Ala Asp Gln
85 90 95

Met Trp Gln Ala Gly Lys Arg Gln Ala Ser Arg Ala Phe Ser Leu Tyr
100 105 110

55 Ala Asn Ile Asp Ile Leu Arg Pro Tyr Phe Asp Val Glu Pro Ala Gln
115 120 125

Val Arg Thr Gly Leu Leu Glu Ser Met Ile Pro Ile Lys Met Val Asn
130 135 140

60

651

Phe Pro Gln Lys Ile Ala Gly Glu Leu Tyr Gly Pro Leu Met Leu Val
 145 150 155 160
 Phe Thr Leu Val Ala Ile Leu Leu His Gly Met Lys Thr Ser Asp Thr
 5 165 170 175
 Ile Ile Arg Glu Gly Thr Leu Met Gly Thr Ala Ile Gly Thr Cys Phe
 180 185 190
 Gly Tyr Trp Leu Gly Val Ser Ser Phe Ile Tyr Phe Leu Ala Tyr Leu
 10 195 200 205
 Cys Asn Ala Gln Ile Thr Met Leu Gln Met Leu Ala Leu Leu Gly Tyr
 210 215 220
 Gly Leu Phe Gly His Cys Ile Val Leu Phe Ile Thr Tyr Asn Ile His
 15 225 230 235 240
 Leu His Ala Leu Phe Tyr Leu Phe Trp Leu Leu Val Gly Gly Leu Ser
 20 245 250 255
 Thr Leu Arg Met Val Ala Val Leu Val Ser Arg Thr Val Gly Pro Thr
 260 265 270
 Gln Arg Leu Leu Leu Cys Gly Thr Leu Ala Ala Leu His Met Leu Phe
 25 275 280 285
 Leu Leu Tyr Leu His Phe Ala Tyr His Lys Val Val Glu Gly Ile Leu
 290 295 300
 Asp Thr Leu Glu Gly Pro Asn Ile Pro Pro Ile Gln Arg Val Pro Arg
 30 305 310 315 320
 Asp Ile Pro Ala Met Leu Pro Ala Ala Arg Leu Pro Thr Thr Val Leu
 35 325 330 335
 Asn Ala Thr Ala Lys Ala Val Ala Val Thr Leu Gln Ser His Xaa
 340 345 350
 40

(2) INFORMATION FOR SEQ ID NO: 490:

(i) SEQUENCE CHARACTERISTICS:

- 45 (A) LENGTH: 265 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 490:

50 Met Arg Gly Ser Arg Gly Gly Trp Ala Gly Glu Met Ala Ala Ser Gly
 1 5 10 15
 Glu Ser Gly Thr Ser Gly Gly Gly Gly Ser Thr Glu Glu Ala Phe Met
 20 25 30
 55 Thr Phe Tyr Ser Glu Val Lys Gln Ile Glu Lys Arg Asp Ser Val Leu
 35 40 45
 60 Thr Ser Lys Asn Gln Ile Glu Arg Leu Thr Arg Pro Gly Ser Ser Tyr
 50 55 60

652

Phe Asn Leu Asn Pro Phe Glu Val Leu Gln Ile Asp Pro Glu Val Thr
 65 70 75 80
 5 Asp Glu Glu Ile Lys Lys Arg Phe Arg Gln Leu Ser Ile Leu Val His
 85 90 95
 Pro Asp Lys Asn Gln Asp Asp Ala Asp Arg Ala Gln Lys Ala Phe Glu
 100 105 110
 10 Ala Val Asp Lys Ala Tyr Lys Leu Leu Leu Asp Gln Glu Gln Lys Lys
 115 120 125
 Arg Ala Leu Asp Val Ile Gln Ala Gly Lys Glu Tyr Val Glu His Thr
 15 130 135 140
 Val Lys Glu Arg Lys Lys Gln Leu Lys Lys Glu Gly Lys Pro Thr Ile
 145 150 155 160
 20 Val Glu Glu Asp Asp Pro Glu Leu Phe Lys Gln Ala Val Tyr Lys Gln
 165 170 175
 Thr Met Lys Leu Phe Ala Glu Leu Glu Ile Lys Arg Lys Glu Arg Glu
 180 185 190
 25 Ala Lys Glu Met His Glu Arg Lys Arg Gln Arg Glu Glu Glu Ile Glu
 195 200 205
 Ala Gln Glu Lys Ala Lys Arg Glu Arg Glu Trp Gln Lys Asn Phe Glu
 30 210 215 220
 Glu Ser Arg Asp Gly Arg Val Asp Ser Trp Arg Asn Phe Gln Ala Asn
 225 230 235 240
 35 Thr Lys Gly Lys Lys Glu Lys Lys Asn Arg Thr Phe Leu Arg Pro Pro
 245 250 255
 Lys Val Lys Met Glu Gln Arg Glu Xaa
 260 265
 40

(2) INFORMATION FOR SEQ ID NO: 491:

- 45 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 25 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 491:

50 Asp Ser Met Pro Thr Cys Pro Leu Xaa Ala Ser Leu Glu Cys Gly Pro
 1 5 10 15
 55 Leu Leu Pro Val Arg Leu Cys Cys Leu
 20 25

60 (2) INFORMATION FOR SEQ ID NO: 492:

653

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 159 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 492:

Met Asn Glu Tyr Arg Val Pro Glu Leu Asn Val Gln Asn Gly Val Leu
 1 5 10 15

10 Lys Ser Leu Ser Phe Leu Phe Glu Tyr Ile Gly Glu Met Gly Lys Asp
 20 25 30

Tyr Ile Tyr Ala Val Thr Pro Leu Leu Glu Asp Ala Leu Met Asp Arg
 35 40 45

15 Asp Leu Val His Arg Gln Thr Ala Ser Ala Val Val Gln His Met Ser
 50 55 60

20 Leu Gly Val Tyr Gly Phe Gly Cys Glu Asp Ser Leu Asn His Leu Leu
 65 70 75 80

Asn Tyr Val Trp Pro Asn Val Phe Glu Thr Ser Pro His Val Ile Gln
 85 90 95

25 Ala Val Met Gly Ala Leu Glu Gly Leu Arg Val Ala Ile Gly Pro Cys
 100 105 110

Arg Met Leu Gln Tyr Cys Leu Gln Gly Leu Phe His Pro Ala Arg Lys
 115 120 125

30 Val Arg Asp Val Tyr Trp Lys Ile Tyr Asn Ser Ile Tyr Ile Gly Ser
 130 135 140

Gln Asp Ala Leu Ile Ala His Tyr Pro Arg Ile Tyr Gln Arg Xaa
 35 145 150 155

40 (2) INFORMATION FOR SEQ ID NO: 493:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 279 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 493:

Met Ile Ser Asp Asn Ser Ala Glu Asn Ile Ala Leu Val Thr Ser Met
 1 5 10 15

50 Tyr Asp Gly Leu Leu Gln Ala Gly Ala Arg Leu Cys Pro Thr Val Gln
 20 25 30

Leu Glu Asp Ile Arg Asn Leu Gln Asp Leu Thr Pro Leu Lys Leu Ala
 35 40 45

55 Ala Lys Glu Gly Lys Ile Glu Ile Phe Arg His Ile Leu Gln Arg Glu
 50 55 60

60 Phe Ser Gly Leu Ser His Leu Ser Arg Lys Phe Thr Glu Trp Cys Tyr
 65 70 75 80

Gly Pro Val Arg Val Ser Leu Tyr Asp Leu Ala Ser Val Asp Ser Cys
 85 90 95
 5 Glu Glu Asn Ser Val Leu Glu Ile Ile Ala Phe His Cys Lys Ser Pro
 100 105 110
 His Arg His Arg Met Val Val Leu Glu Pro Leu Asn Lys Leu Leu Gln
 115 120 125
 10 Ala Lys Trp Asp Leu Leu Ile Pro Lys Phe Phe Leu Asn Phe Leu Cys
 130 135 140
 Asn Leu Ile Tyr Met Phe Ile Phe Thr Ala Val Ala Tyr His Gln Pro
 15 145 150 155 160
 Thr Leu Lys Lys Gln Ala Ala Pro His Leu Lys Ala Glu Val Gly Asn
 165 170 175
 20 Ser Met Leu Leu Thr Gly His Ile Leu Ile Leu Leu Gly Gly Ile Tyr
 180 185 190
 Leu Leu Val Gly Gln Leu Trp Tyr Phe Trp Arg Arg His Val Phe Ile
 195 200 205
 25 Trp Ile Ser Phe Ile Asp Ser Tyr Phe Glu Ile Leu Phe Leu Phe Gln
 210 215 220
 Ala Leu Leu Thr Val Val Ser Gln Val Leu Cys Phe Leu Xaa Ile Glu
 30 225 230 235 240
 Trp Tyr Leu Pro Leu Leu Val Ser Ala Leu Val Leu Gly Trp Leu Asn
 245 250 255
 35 Leu Leu Tyr Tyr Thr Arg Gly Phe Gln His Thr Gly Ile Tyr Ser Val
 260 265 270
 Met Ile Gln Lys Pro Trp Xaa
 275
 40

(2) INFORMATION FOR SEQ ID NO: 494:

45 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 193 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 494:
 50 Met Ile Arg Cys Gly Leu Ala Cys Glu Arg Cys Arg Trp Ile Leu Pro
 1 5 10 15
 Leu Leu Leu Leu Ser Ala Ile Ala Phe Asp Ile Ile Ala Leu Ala Gly
 55 20 25 30
 Arg Gly Trp Leu Gln Ser Ser Asp His Gly Gln Thr Ser Ser Leu Trp
 35 40 45
 60 Trp Lys Cys Ser Gln Glu Gly Gly Gly Ser Gly Ser Tyr Glu Glu Gly

655

[illegible]

30

(2) INFORMATION FOR SEQ ID NO: 495:

35 (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 205 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 495:

40	Met Ala Ala Gly Asp Gln Val Phe Ser Gly Ala Gly His Val Xaa Glu 1 5 10 15
	His Val Ala Gly Gly Arg His Ala Trp Leu Leu Thr Trp Gln Ser Ala 20 25 30
45	Cys Pro Ala Asn Arg Leu Ser Leu Val Pro Leu Val Pro Ser Ala Ser 35 40 45
	Met Thr Arg Leu Met Arg Xaa Arg Thr Ala Ser Gly Ser Ser Val Ile 50 55 60
	Leu Trp Met Ala Pro Ala Ala Ala Pro Thr Pro Ala Arg Ala Pro Glu 65 70 75 80
55	Ala Ala Pro Thr Pro Ala Arg Ala Pro Ala Ala Ala Arg Thr Pro Ala 85 90 95
	Arg Gly Pro Thr Trp Thr Ser Pro Pro Thr Arg Val Leu Leu Gly Thr 100 105 110
60	

656

Xaa Pro Gly Pro Ser Pro Trp Arg Ser Pro Ala Arg Arg Pro Ala Gln
 115 120 125
 5 Leu Pro Pro Pro Asp Ser Asp Leu Cys Ser Gly Pro Leu Leu Pro Gly
 130 135 140
 Pro Phe Ser Pro Pro Ala Cys His Thr Ala Pro Asn Ser Val Leu Ile
 145 150 155 160
 10 Gln Ser Leu Phe Cys Lys Ser Glu Leu Trp Trp Arg Gln Met Arg Ser
 165 170 175
 Ile Thr Trp Val Pro Ser Pro Lys Ala Gly Trp Arg Trp Thr Lys Gly
 180 185 190
 15 Arg Lys Gln Ala Ser Pro His Arg Ile Leu Phe His Xaa
 195 200 205

20

(2) INFORMATION FOR SEQ ID NO: 496:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 147 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 496:

30 Met Ala Leu Thr Leu Leu Pro Ser Val Ser Arg Leu Pro Gly Glu Arg
 1 5 10 15
 Met Ala Ala Ser Gly Leu Pro Tyr Val Leu His His Lys Ser Ser Leu
 20 25 30
 35 Met Lys Val Ile Phe Phe Pro Tyr Pro Val Leu Pro Leu Pro Ala Pro
 35 40 45
 Asn Gly Thr Trp Val Pro Arg Leu Val Leu Gly Leu Gly Ser Gly Asp
 50 55 60
 40 Gln Val His Tyr Leu Pro Ile Ser Ser Ser Ile Val Asn Tyr Gly Thr
 65 70 75 80
 Ser Val Ser Gly Lys Ser Trp Val Phe Leu Val Tyr Pro Leu His Pro
 85 90 95
 45 Thr Pro Thr Trp Ser Thr Arg Cys Phe Gln Val Trp Asp Leu Leu Ser
 100 105 110
 50 Val Glu Leu Pro Asp Lys Gly Glu Gly Asn Thr Arg Arg Ala Ser Gly
 115 120 125
 Val Pro Gly Leu Ser Gln Leu Pro Thr Ser His Lys Pro Ile Lys Gln
 130 135 140
 55 Glu Tyr Xaa
 145

60

(2) INFORMATION FOR SEQ ID NO: 497:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 64 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 497:

5 Met Val Trp Val Leu Trp Ser Ala Pro Ser Leu Ala Pro Pro Trp Val
 10 1 5 10 15
 Gly Pro Cys Trp Pro Ser Thr Gly Asn Cys Cys Leu Cys Glu Val Gly
 20 25 30
 15 Ala Ala Leu Pro Pro Arg Gly Pro Ser Leu Ser Asp Cys Leu Gly Leu
 35 40 45
 Pro Pro Trp Thr Pro Trp Gly Pro Ala Trp Thr Leu Ala Gln Ser Xaa
 50 55 60
 20

25

(2) INFORMATION FOR SEQ ID NO: 498:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 94 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 498:

30 Met Ser Thr Gly Ala Leu Asn Thr Ser Pro Pro Ala Ser Asn Arg Leu
 35 1 5 10 15
 Glu Ser Thr Leu Asn Glu Tyr Leu Ile Gln Pro Gln Leu His Cys Ser
 20 25 30
 40 Ser Val Gln Arg Leu Thr Leu Lys Trp Gly Cys Ser Ser Leu Gln Arg
 35 40 45
 Asp Gly Gln Ala Val Pro Trp Gly Leu Trp Gln Arg Ala Tyr Pro Ser
 50 55 60
 45 Leu Leu Pro Thr Leu Pro Ser Asp Leu Leu Arg Pro His Ala Val Thr
 65 70 75 80
 Pro Ser Val Ser Val Ser Val His Thr Cys Glu Ser Ser Xaa
 85 90
 50

55

(2) INFORMATION FOR SEQ ID NO: 499:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 499:

60

Met Phe Leu Ile Phe Val Tyr Phe Leu Lys Xaa Leu Phe Ser Ser Ser
 1 5 10 15

5 Leu Pro Phe Leu Trp Leu
 20

10 (2) INFORMATION FOR SEQ ID NO: 500:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 33 amino acids

(B) TYPE: amino acid

15 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 500:

Arg Gly Gly Leu Cys Pro Leu Leu Val Pro Gly Pro Leu Ala Arg Gln
 1 5 10 15

20 Glu Pro Ser Pro Ser Leu Gln Gly Cys Ser Glu Ser Pro Val Gly Met
 20 25 30

25 Asp

30 (2) INFORMATION FOR SEQ ID NO: 501:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 501:

Met Gln Phe Leu Leu Thr Ala Phe Leu Leu Val Pro Leu Leu Ala Leu
 1 5 10 15

40 Cys Asp Val Pro Ile Ser Leu Gly Phe Ser Pro Ser
 20 25

45 (2) INFORMATION FOR SEQ ID NO: 502:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids

(B) TYPE: amino acid

50 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 502:

Pro Gly Lys Pro Gln Ala Cys Pro Glu Leu Thr Ser Val Leu Pro
 1 5 10 15

55

(2) INFORMATION FOR SEQ ID NO: 503:

60 (i) SEQUENCE CHARACTERISTICS:

659

(A) LENGTH: 19 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 503:

Asn Lys Ser Leu Xaa Ser Cys Leu Phe Val Leu His Phe Val Leu His
 1 5 10 15

Cys Xaa Phe

(2) INFORMATION FOR SEQ ID NO: 504:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 29 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 504:

Met Glu Lys Thr His Arg Leu Arg Ile Arg Asn Pro Cys Leu Gln Phe
 1 5 10 15

Ser Ile Leu Asn Leu Phe Leu Leu Lys Met Ile Val Ser
 20 25

(2) INFORMATION FOR SEQ ID NO: 505:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 75 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 505:

Met Val Asp Ile Ser Lys Met His Met Ile Leu Tyr Asp Leu Gln Gln
 1 5 10 15

Asn Leu Ser Ser Ser His Arg Ala Leu Glu Lys Gln Ile Asp Thr Leu
 20 25 30

Ala Gly Lys Leu Asp Ala Leu Thr Glu Leu Leu Ser Thr Ala Leu Gly
 35 40 45

Pro Ser Ser Phe Gln Asn Pro Ala Ser Ser Pro Ser Ser Trp Thr His
 50 55 60

Glu Glu Glu Pro Gly Tyr Phe Pro Gln Tyr Xaa
 65 70 75

(2) INFORMATION FOR SEQ ID NO: 506:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 506:

Leu Pro Leu Ala Glu Leu Lys Asn Trp Val
 1 5 10

5

(2) INFORMATION FOR SEQ ID NO: 507:

10

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 207 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 507:

15

Met Leu Trp Phe Gly Gly Cys Ser Ala Val Asn Ala Thr Gly His Leu
 1 5 10 15

20

Ser Asp Thr Leu Trp Leu Ile Pro Ile Thr Phe Leu Thr Ile Gly Tyr
 20 25 30

Gly Asp Val Val Pro Gly Thr Met Trp Gly Lys Ile Val Cys Leu Cys
 35 40 45

25

Thr Gly Val Met Gly Val Cys Cys Thr Ala Leu Leu Val Ala Val Val
 50 55 60

30

Ala Arg Lys Leu Glu Phe Asn Lys Ala Glu Lys His Val His Asn Phe
 65 70 75 80

Met Met Asp Ile Gln Tyr Thr Lys Glu Met Lys Glu Ser Ala Ala Arg
 85 90 95

35

Val Leu Gln Glu Ala Trp Met Phe Tyr Lys His Thr Arg Arg Lys Glu
 100 105 110

Ser His Ala Ala Arg Arg His Gln Arg Xaa Leu Leu Ala Ala Ile Asn
 115 120 125

40

Ala Phe Arg Gln Val Arg Leu Lys His Arg Lys Leu Arg Glu Gln Val
 130 135 140

45

Asn Ser Met Val Asp Ile Ser Lys Met His Met Ile Leu Tyr Asp Leu
 145 150 155 160

Gln Gln Asn Leu Ser Ser Ser His Arg Ala Leu Glu Lys Gln Ile Asp
 165 170 175

50

Thr Leu Ala Gly Lys Leu Asp Ala Leu Thr Glu Leu Leu Ser Thr Ala
 180 185 190

Leu Gly Pro Arg Gln Leu Pro Glu Pro Ser Gln Gln Ser Lys Xaa
 195 200 205

55

(2) INFORMATION FOR SEQ ID NO: 508:

60

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 36 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 508:

5 Met Trp Arg Cys Arg Gly Lys Leu Ser Phe Pro Leu Phe Ala Val Val
 1 5 10 15
 Ile Val Ser Cys Arg Lys Asp Gly Pro Asp Ala Ala Ala Pro Ala
 20 25 30
 10 Val Xaa Lys Lys
 35

15

(2) INFORMATION FOR SEQ ID NO: 509:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 509:

25 Met Ala Leu Val Ala Leu Phe Thr Gln Leu Met Arg Xaa Leu Gly Arg
 1 5 10 15
 Cys Pro Gln

30

(2) INFORMATION FOR SEQ ID NO: 510:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 32 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 510:

40 Met Thr Phe Pro Phe Glu Lys Glu Asn Ser Cys Phe Gln Cys Leu Leu
 1 5 10 15
 Phe Asp Ser Trp Arg Glu Gln Thr Arg Thr Asn Ile Gln Pro Gln Arg
 20 25 30
 45

50

(2) INFORMATION FOR SEQ ID NO: 511:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 511:

60 Met His Leu Leu Asp Phe Phe Arg Asp Leu Val Leu Leu Val Leu Leu
 1 5 10 15

Ala Leu Leu Asp Ser Phe Trp Leu Glu Val Gln Lys
 20 25

5

(2) INFORMATION FOR SEQ ID NO: 512:

10

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 512:

15

Met Cys Leu Ile His Phe Ile Lys Ile Ile Leu Val Phe Ile Leu Lys
 1 5 10 15

Leu Trp Leu Tyr Ser Gln Lys Cys Pro Lys
 20 25

20

(2) INFORMATION FOR SEQ ID NO: 513:

25

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 33 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 513:

30

Met Ile His Val His Glu Trp Asn Asp Gln Met Leu Met Val Tyr Ile
 1 5 10 15

Phe Leu Tyr Pro Val Ser Ile Thr Phe Leu Asn Leu Cys Ser Leu Thr
 20 25 30

35

Cys

40

(2) INFORMATION FOR SEQ ID NO: 514:

45

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 47 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 514:

50

Leu Asn Glu Ser Tyr Val Ser Arg Ala Gly Gly Trp Phe Ser Met Phe
 1 5 10 15

Xaa Leu Ile Phe Phe Leu Leu Ala Leu Gly Ser Xaa Leu Cys Leu Leu
 20 25 30

55

Leu Cys Leu Pro Ser Phe Asn Lys Thr Arg Arg Lys Gln Lys Pro
 35 40 45

60

(2) INFORMATION FOR SEQ ID NO: 515:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 43 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 515:

10 Ser Ser Lys Thr Pro Leu Pro Ser Glu Arg Arg Trp Ile Ser Gly Ser
1 5 10 15

Ser Leu Met Ala Pro Arg Pro Trp Leu Leu Gly Ile Ala Leu Leu Gly
20 25 30

15 Leu Trp Ala Leu Glu Pro Ala Leu Gly His Trp
35 40

20 (2) INFORMATION FOR SEQ ID NO: 516:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 3 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 516:

Leu Asn Trp
1
30

(2) INFORMATION FOR SEQ ID NO: 517:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 174 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 517:

	Phe	Ala	Phe	Cys	Ala	Glu	Leu	Met	Ile	Gln	Asn	Trp	Thr	Leu	Gly	Ala
	1				5					10					15	
45	Val	Asp	Ser	Gln	Met	Asp	Asp	Met	Asp	Met	Asp	Leu	Asp	Lys	Glu	Phe
				20					25					30		
	Leu	Gln	Asp	Leu	Lys	Glu	Leu	Lys	Val	Leu	Val	Ala	Asp	Lys	Asp	Leu
				35				40					45			
50	Leu	Asp	Leu	His	Lys	Ser	Leu	Val	Cys	Thr	Ala	Leu	Arg	Gly	Lys	Leu
		50					55					60				
	Gly	Val	Phe	Ser	Glu	Met	Glu	Ala	Asn	Phe	Lys	Asn	Leu	Ser	Arg	Gly
	65					70					75					80
55																
	Leu	Val	Asn	Val	Ala	Ala	Lys	Leu	Thr	His	Asn	Lys	Asp	Val	Arg	Asp
					85					90					95	
	Leu	Phe	Val	Asp	Leu	Val	Glu	Lys	Phe	Val	Glu	Pro	Cys	Arg	Ser	Asp
60				100					105				110			

His Trp Pro Leu Ser Asp Val Arg Phe Phe Leu Asn Gln Tyr Ser Ala
115 120 125

5 Ser Val His Ser Leu Asp Gly Phe Arg His Gln Ala Ser Gly Thr Ala
130 135 140

Thr Trp Ala Pro Ser Ala Ala Ala Ser Cys Ala Cys Ile Met Thr Glu
145 150 155 160

10 Val Pro Pro Asn Ala Pro Pro Thr Leu Thr Ile Lys Leu Leu
165 170

15 (2) INFORMATION FOR SEQ ID NO: 518:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 43 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 518:

25 Met Trp Lys Asn Leu Gly Ser Gly Ser Val Phe Val Thr Trp Phe Ser
1 5 10 15

Leu Val Met Ile Leu Ser Gly Ile Gly Pro Leu Gly Asp Ala Glu Asp
20 25 30

30 Ser Ile Ser Asp Val Ser His Arg Leu Arg Pro
35 40

35 (2) INFORMATION FOR SEQ ID NO: 519:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

40 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 519:

Phe Gln Phe Pro Leu Leu Thr Ile Ala Leu Gln Phe Leu
1 5 10

45

(2) INFORMATION FOR SEQ ID NO: 520:

50 (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 30 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 520:

Met His Tyr Val Ile Val Leu Ser Leu Phe Val Val Leu Glu Lys Lys
1 5 10 15

60 Asn Lys Met Gly Ser Asp Gly Cys Leu Arg Lys Asn Gly Ser
20 25 30

(2) INFORMATION FOR SEQ ID NO: 521:

5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 47 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

10

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 521:

Met Ser Arg Ser Ile Val Leu Arg Gly Ser Leu Phe Leu Phe Phe Ser
 1 5 10 15
 His Tyr Thr Leu Lys Leu Leu Ser Val Ile Lys Gln Thr Asn Arg Lys
 20 25 30
 Ile Val Trp Glu Lys Pro Cys Ile Arg Leu Phe Tyr Xaa Val Leu
 35 40 45

20

(2) INFORMATION FOR SEQ ID NO: 522:

25

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 522:

Met Pro Leu Pro Val Leu Leu Cys Leu Thr Leu Pro Met Pro Leu Pro
 1 5 10 15
 Ser Ala Thr Ala Arg Gly Gly Asn Arg Thr
 20 25

35

(2) INFORMATION FOR SEQ ID NO: 523:

40

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 58 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 523:

Ser Ser Ile Pro Val Ser Ile Leu Ile Gly Met Lys Leu Ile Leu Tyr
 1 5 10 15
 Leu Leu Ile Thr Glu Ser Gly Ser His Glu Lys Lys Ser Phe Tyr Pro
 20 25 30
 Ser Phe Lys Tyr Met Phe Lys Ile Ile Ile Tyr Val Ser Ala Tyr Cys
 35 40 45
 Arg Thr Ala Leu Arg Ala Thr Val Ser His
 50 55

60

666

(2) INFORMATION FOR SEQ ID NO: 524:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 524:

Asn Arg Thr Leu Leu Phe Leu Ile Leu Phe Val Leu Phe Gly Leu Gly
 1 5 10 15

Tyr Gly Phe

15

(2) INFORMATION FOR SEQ ID NO: 525:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 40 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 525:

Met Phe Leu Leu Val Leu Ser Val Phe Cys Asp Phe Met Cys Ser Ile
 1 5 10 15

Ala Pro Arg Cys His Ala Leu Ser Leu Val Ser Leu Arg Ala Gln His
 20 25 30

30

Leu Ser Leu Phe Ile Thr Cys His
 35 40

35

(2) INFORMATION FOR SEQ ID NO: 526:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 57 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 526:

Met Leu Leu Phe Ile Leu Leu Thr Leu Ser Ser Gly Cys Arg Leu Leu
 1 5 10 15

45

Val Ser Ser Trp Lys Thr Phe Leu Pro His Phe Ser Leu Pro Gly Pro
 20 25 30

Arg Glu His Pro Glu Gly Ser Arg Thr Trp Phe Phe Arg Tyr Trp Glu
 35 40 45

50

Pro Gly Ala His Cys Leu His Cys Ala
 50 55

55

(2) INFORMATION FOR SEQ ID NO: 527:

60

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 527:

5 Ala Arg Leu Leu Leu Phe Leu Ser Ser Val His Pro Ser Ile Met Pro
 1 5 10 15
 Ser Cys Asn Gln Leu
 10 20

(2) INFORMATION FOR SEQ ID NO: 528:

15 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 39 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 528:

 Met Ser Leu Thr Ser Ser Leu Thr Phe Leu Ser His Ile Leu Leu Leu
 1 5 10 15
 25 Pro Gln Lys Leu Gln Phe Leu Ser Trp Met Glu Arg Gln Gln Arg Cys
 20 25 30
 Thr Gly Val Ala Lys Tyr Ala
 35
 30

(2) INFORMATION FOR SEQ ID NO: 529:

35 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 128 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

40 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 529:

 Met Val Leu Arg Leu Ile Gln Leu Ile Phe Leu Ile Phe Phe Ile His
 1 5 10 15
 Ile Ile Ile Leu Leu Ile Pro Gly Ser Arg Pro Cys Gly Ser Trp Val
 45 20 25 30
 Asn Asp Arg Xaa Leu Gly Leu Arg Asp Val Thr His Leu Ile Tyr Leu
 35 40 45
 50 His Trp Val His Gly His Leu Pro Trp Cys His Pro Tyr Ile Gln Val
 50 55 60
 Glu Phe Ser Ala Leu Ile Glu Ser Thr Ala Gln Leu Gly Leu Pro Phe
 65 70 75 80
 55 Ser Trp Val Arg Val Ile His Pro Phe Leu Val Leu Pro Cys Leu Tyr
 85 90 95
 Ser Pro Gly Leu Lys Asn Gly Ile Phe Leu Phe Leu Leu Arg Ala Met
 60 100 105 110

Pro Gly Gly Met Phe Pro Gly Asn Leu Glu Ala Phe Arg Val Pro Val
 115 120 125

5

10 (2) INFORMATION FOR SEQ ID NO: 530:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 82 amino acids

(B) TYPE: amino acid

15 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 530:

Met Gly Ser Ser Val Leu Pro Phe Cys Val Cys Val Thr Ser Pro Ser
 1 5 10 15

20

Leu Gly Gly Arg Cys Ile Gln Gly Arg Phe Ala Ser His Ser Lys Phe
 20 25 30

25

Trp Gly Phe Gly Xaa Lys Thr Ala Ser Phe Gly Ala Val Gly Glu Thr
 35 40 45

Pro Pro Asp Gln Glu Pro Gln Lys Glu Thr Glu Pro Ala Thr Ser Ser
 50 55 60

30

His Ala Arg Pro Trp Ala Arg Val Ile Gly Leu Arg Ile Trp Pro Gln
 65 70 75 80

Pro Asn

35

(2) INFORMATION FOR SEQ ID NO: 531:

40 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 531:

Met Leu Leu Ser Val Ala Ile Phe Ile Leu Leu Thr Leu Val Tyr Ala
 1 5 10 15

50

Tyr Trp Thr Met
 20

55

(2) INFORMATION FOR SEQ ID NO: 532:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 75 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

60 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 532:

Asn Cys Glu Ile Leu Glu Tyr Cys Tyr Tyr Leu Thr Gln Leu Lys Ile
 1 5 10 15
 5 Ser Met Gly Lys Tyr Leu Ser Ile Pro Thr Val Leu Leu Lys Ile Ile
 20 25 30
 Arg Cys Ser Ile Thr Ala Val Ser Asp Ser Ser Thr Ser Trp Ala Ile
 35 40 45
 10 Lys Ala Gln Leu Lys Ile Glu Asn Lys Asp Leu Asp Asn Lys Thr Ala
 50 55 60
 15 Lys Gly Gly Gly Gln Glu Ala Leu Thr Cys Thr
 65 70 75

20 (2) INFORMATION FOR SEQ ID NO: 533:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 533:

Met Phe Leu Met Arg Met His Leu Cys Phe Cys Lys Tyr Cys Cys Ser
 1 5 10 15
 30 Phe Ile Val Thr Pro Thr Ser Thr Ser Asn Thr Xaa Ser Tyr Leu Trp
 20 25 30
 Pro Trp Ile Ser Ala Ser Met Ala Gly Arg Gly Ser Xaa Trp Ala Cys
 35 40 45
 35 Thr Leu Asn Ala Val Thr Arg Glu Gly Leu Pro Glu
 50 55 60

40 (2) INFORMATION FOR SEQ ID NO: 534:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 39 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 534:

Met Ser Leu Leu Asn Thr His Thr Leu Cys Phe Val Leu Phe Cys Phe
 50 1 5 10 15
 Thr Leu Ser Ile Asn Gln Glu Lys Leu Ala Asn His Leu Ala Phe Arg
 20 25 30
 55 Ile Leu Phe Phe Ile Val Phe
 35

60 (2) INFORMATION FOR SEQ ID NO: 535:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 535:

Met Leu

1

(2) INFORMATION FOR SEQ ID NO: 536:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 36 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 536:

Met Asp Gln Phe Lys Ile Phe Tyr Phe Leu Lys Ala Phe Phe Ala Cys

1

5

10

15

Cys Asn Val Gln Asp Pro Ser Pro Phe Met Gly Glu Thr Gly Ser Tyr

20

25

30

Leu Asn Ile Gly

35

(2) INFORMATION FOR SEQ ID NO: 537:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 537:

Met Phe Asp Phe Leu Ser Tyr Phe Lys Asp Leu Leu Ser Cys

1

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(2) INFORMATION FOR SEQ ID NO: 538:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 538:

Met Gly Phe Gly Phe Val Leu Asn Ile Phe Ser Phe Phe Leu Xaa Pro

1

5

10

15

Pro Leu

(2) INFORMATION FOR SEQ ID NO: 539:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 539:

Leu Leu Leu Trp Thr Leu Leu Ala Xaa Tyr Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO: 540:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 108 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 540:

Met Ala Ala Gln Lys Asp Gln Gln Lys Asp Ala Glu Ala Glu Gly Leu
1 5 10 15
Ser Gly Thr Thr Leu Leu Pro Lys Leu Ile Pro Ser Gly Ala Gly Arg
20 25 30
Glu Trp Leu Glu Arg Arg Arg Ala Thr Ile Arg Pro Trp Ser Thr Phe
35 40 45
Val Asp Gln Gln Arg Phe Ser Arg Pro Arg Asn Leu Gly Glu Leu Cys
50 55 60
Gln Arg Leu Val Arg Asn Val Glu Tyr Tyr Gln Ser Asn Tyr Val Phe
65 70 75 80
Val Phe Leu Gly Leu Ile Leu Tyr Cys Val Val Thr Ser Pro Met Leu
85 90 95
Leu Val Ala Leu Ala Val Phe Phe Gly Ala Cys Xaa
100 105

(2) INFORMATION FOR SEQ ID NO: 541:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 106 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 541:

Phe Val Phe Leu Gly Leu Ile Leu Tyr Cys Val Val Thr Ser Pro Met
1 5 10 15
Leu Leu Val Ala Leu Ala Val Phe Phe Gly Ala Cys Tyr Ile Leu Tyr
20 25 30
Leu Arg Thr Leu Glu Ser Lys Leu Val Leu Phe Gly Arg Glu Val Ser
35 40 45

Pro Ala His Gln Tyr Ala Leu Ala Gly Gly Ile Ser Phe Pro Phe Phe
 50 55 60

5 Trp Leu Ala Gly Ala Gly Ser Ala Val Phe Trp Val Leu Gly Ala Thr
 65 70 75 80

Leu Val Val Ile Gly Ser His Ala Ala Phe His Gln Ile Glu Ala Val
 85 90 95

10 Asp Gly Glu Glu Leu Gln Met Glu Pro Val
 100 105

15

(2) INFORMATION FOR SEQ ID NO: 542:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 136 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 542:

25 Met Asp Arg Phe Thr Val Ala Gly Val Leu Pro Asp Ile Glu Gln Phe
 1 5 10 15

Phe Asn Ile Gly Asp Ser Ser Ser Gly Leu Ile Gln Thr Val Phe Ile
 20 25 30

30 Ser Ser Tyr Met Val Leu Ala Pro Val Phe Gly Tyr Leu Gly Asp Arg
 35 40 45

Tyr Asn Arg Lys Tyr Leu Met Cys Gly Gly Ile Ala Phe Trp Ser Leu
 50 55 60

35 Val Thr Leu Gly Ser Ser Phe Ile Pro Gly Glu His Phe Trp Leu Leu
 65 70 75 80

40 Leu Leu Thr Arg Gly Leu Val Gly Val Gly Glu Ala Ser Tyr Ser Thr
 85 90 95

Ile Ala Pro Thr Leu Ile Ala Asp Leu Phe Val Ala Asp Gln Arg Thr
 100 105 110

45 Gly Cys Ser Ala Ser Ser Thr Leu Pro Phe Arg Trp Ala Val Val Trp
 115 120 125

Ala Thr Leu Gln Ala Pro Lys Xaa
 130 135

50

(2) INFORMATION FOR SEQ ID NO: 543:

55 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 424 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

60 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 543:

Met Ala Gly Asp Trp His Trp Ala Leu Arg Val Thr Pro Gly Leu Gly
 1 5 10 15
 5 Val Val Ala Val Leu Leu Leu Phe Leu Val Val Arg Glu Pro Pro Arg
 20 25 30
 Gly Ala Val Glu Arg His Ser Asp Leu Pro Pro Leu Asn Pro Thr Ser
 35 40 45
 10 Trp Trp Ala Asp Leu Arg Ala Leu Ala Arg Asn Pro Ser Phe Val Leu
 50 55 60
 Ser Ser Leu Gly Phe Thr Ala Val Ala Phe Val Thr Gly Ser Leu Ala
 65 70 75 80
 15 Leu Trp Ala Pro Ala Phe Leu Leu Arg Ser Arg Val Val Leu Gly Glu
 85 90 95
 Thr Pro Pro Cys Leu Pro Gly Asp Ser Cys Ser Ser Ser Asp Ser Leu
 100 105 110
 20 Ile Phe Gly Leu Ile Thr Cys Leu Thr Gly Val Leu Gly Val Gly Leu
 115 120 125
 25 Gly Val Glu Ile Ser Arg Arg Xaa Arg His Ser Asn Pro Arg Ala Asp
 130 135 140
 Pro Leu Val Cys Ala Thr Gly Leu Leu Gly Ser Ala Pro Phe Leu Phe
 145 150 155 160
 30 Leu Ser Leu Ala Cys Ala Arg Gly Ser Ile Val Ala Thr Tyr Ile Phe
 165 170 175
 35 Ile Phe Ile Gly Glu Thr Leu Leu Ser Met Asn Trp Ala Ile Val Ala
 180 185 190
 Asp Ile Leu Leu Tyr Val Val Ile Pro Thr Arg Arg Ser Thr Ala Glu
 195 200 205
 40 Ala Phe Gln Ile Val Leu Ser His Leu Leu Gly Asp Ala Gly Ser Pro
 210 215 220
 Tyr Leu Ile Gly Leu Ile Ser Asp Arg Leu Arg Arg Asn Trp Pro Pro
 225 230 235 240
 45 Ser Phe Leu Ser Glu Phe Arg Ala Leu Gln Phe Ser Leu Met Leu Cys
 245 250 255
 50 Ala Phe Val Gly Ala Leu Gly Gly Ala Leu Ser Trp Ala Pro Xaa Ser
 260 265 270
 Ser Leu Arg Pro Thr Ala Gly Gly His Ser Cys Thr Cys Arg Ala Cys
 275 280 285
 55 Cys Thr Lys Gln Gly Pro Gln Thr Thr Gly Leu Trp Cys Pro Ser Gly
 290 295 300
 Ala Ala Pro Pro Ala Cys Pro Trp Pro Val Cys Ser Ser Glu Arg Leu
 305 310 315 320
 60

Pro Leu Thr Tyr Leu His Ile Cys His Ser Xaa Pro Trp Ala His Pro
 325 330 335

5 Thr Lys Gly Leu Gly Leu Thr Pro Trp Pro Gly Pro Ala Ser Arg Gly
 340 345 350

Thr Leu Gly Arg Val Pro Ala Pro Arg His Tyr Xaa Gly Ser Ser Gly
 355 360 365

10 Glu Glu Val Gly Val Gln Glu Gly Asp Pro Ser Pro Gln Gly Xaa Pro
 370 375 380

Gln Gly Leu Gly Ala Ile Cys Asn Gly Ile Lys Phe Val Ala Arg Pro
 385 390 395 400

15 Gln Val Pro Ala Leu Val Phe Leu Trp Val Ala Ser Asp Leu Ala Pro
 405 410 415

20 Arg Leu His Pro Arg Ala Pro Glu
 420

(2) INFORMATION FOR SEQ ID NO: 544:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 39 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 544:

Met Phe Arg Phe Val Ile Cys Leu Phe Leu Trp Leu Val Leu Cys Arg
 1 5 10 15

35 Asp Ser Thr Ser Ala Ser Arg Ile Ala Leu Tyr Tyr Arg Ile Val Phe
 20 25 30

Leu Ile His Gln Cys Ser Ser
 35

(2) INFORMATION FOR SEQ ID NO: 545:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 58 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 545:

Met Leu Pro Trp Xaa Ala Gln Leu Leu Asp Arg Thr Ile Gly Pro Leu
 1 5 10 15

55 Tyr Leu Leu Phe Val Gln Phe Ser Pro Ala Phe Ser Arg Thr Ser Pro
 20 25 30

Trp Arg Ser Pro Lys Asn Phe Arg Arg Leu Tyr Pro Pro Cys Thr Thr
 35 40 45

60 Ser Gly Cys Ala Ala Arg Trp Leu Phe Ser

50

55

5 (2) INFORMATION FOR SEQ ID NO: 546:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 33 amino acids

(B) TYPE: amino acid

10 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 546:

Met Gly Leu Ser Val Leu Leu Pro Leu Cys Leu Leu Gly Pro Gly Arg
 1 5 10 15
 Phe Thr Ser Gly Gln Lys Pro Leu Asp Thr Pro Gly Leu Gly Val Pro
 20 25 30

20 Phe

25 (2) INFORMATION FOR SEQ ID NO: 547:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 367 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 547:

Met Ala Lys Pro Gln Val Val Val Ala Pro Val Leu Met Ser Lys Leu
 1 5 10 15
 Ser Val Asn Ala Pro Glu Phe Tyr Pro Ser Gly Tyr Ser Ser Ser Tyr
 20 25 30
 Thr Glu Ser Tyr Glu Asp Gly Cys Glu Asp Tyr Pro Thr Leu Ser Glu
 35 40 45
 Tyr Val Gln Asp Phe Leu Asn His Leu Thr Glu Gln Pro Gly Ser Phe
 50 55 60
 Glu Thr Glu Ile Glu Gln Phe Ala Glu Thr Leu Asn Gly Cys Val Thr
 65 70 75 80
 Thr Asp Asp Ala Leu Gln Glu Leu Val Glu Leu Ile Tyr Gln Gln Ala
 85 90 95
 Thr Ser Ile Pro Asn Phe Ser Tyr Met Gly Ala Arg Leu Cys Asn Tyr
 100 105 110
 Leu Ser His His Leu Thr Ile Ser Pro Gln Ser Gly Asn Phe Arg Gln
 115 120 125
 Leu Leu Leu Gln Arg Cys Arg Thr Glu Tyr Glu Val Lys Asp Gln Ala
 130 135 140
 Ala Lys Gly Asp Glu Val Thr Arg Lys Arg Phe His Ala Phe Val Leu
 145 150 155 160

676

Phe Leu Gly Glu Leu Tyr Leu Asn Leu Glu Ile Lys Gly Thr Asn Gly
 165 170 175
 5 Gln Val Thr Arg Ala Asp Ile Leu Gln Val Gly Leu Arg Glu Leu Leu
 180 185 190
 Asn Ala Leu Phe Ser Asn Pro Met Asp Asp Asn Leu Ile Cys Ala Val
 195 200 205
 10 Lys Leu Leu Lys Leu Thr Gly Ser Val Leu Glu Asp Ala Trp Lys Glu
 210 215 220
 Lys Gly Lys Met Asp Met Glu Glu Ile Ile Gln Arg Ile Glu Asn Val
 15 225 230 235 240
 Val Leu Asp Ala Asn Cys Ser Arg Asp Val Lys Gln Met Leu Leu Lys
 245 250 255
 20 Leu Val Glu Leu Arg Ser Ser Asn Trp Gly Arg Val His Ala Thr Ser
 260 265 270
 Thr Tyr Arg Glu Ala Thr Pro Glu Asn Asp Pro Asn Tyr Phe Met Asn
 25 275 280 285
 Glu Pro Thr Phe Tyr Thr Ser Asp Gly Val Pro Phe Thr Ala Ala Asp
 290 295 300
 Pro Asp Tyr Gln Glu Lys Tyr Gln Glu Leu Leu Glu Arg Glu Asp Phe
 30 305 310 315 320
 Phe Pro Asp Tyr Glu Glu Asn Gly Thr Asp Leu Ser Gly Ala Gly Asp
 325 330 335
 35 Pro Tyr Leu Asp Asp Ile Asp Asp Glu Met Asp Pro Glu Ile Glu Glu
 340 345 350
 Ala Tyr Glu Lys Phe Cys Leu Glu Ser Glu Arg Lys Arg Lys Gln
 40 355 360 365

(2) INFORMATION FOR SEQ ID NO: 548:

45 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 77 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 548:
 50 Met Leu Arg Leu Asp Ile Ile Asn Ser Leu Val Thr Thr Val Phe Met
 1 5 10 15
 Leu Ile Val Ser Val Leu Ala Leu Ile Pro Glu Thr Thr Thr Leu Thr
 55 20 25 30
 Val Gly Gly Gly Val Phe Ala Leu Val Thr Ala Val Cys Cys Leu Ala
 35 40 45
 60 Asp Gly Ala Leu Ile Tyr Arg Lys Leu Leu Phe Asn Pro Ser Gly Pro

677

50 55 60
 Tyr Gln Lys Lys Pro Val His Glu Lys Lys Glu Val Leu
 65 70 75

(2) INFORMATION FOR SEQ ID NO: 549:

10 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 47 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 15 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 549:

Met Leu Lys Gln Val Met Phe Val Phe Ser Gly Met Gly Pro Arg Ser
 1 5 10 15
 His Cys Trp Gly Leu Pro Leu Ala Cys Gly Thr Phe Val Gln Gly His
 20 25 30
 Gln Ala Asp Ser Ser His Leu Leu Pro Leu Lys His Gln Gly Ala
 35 40 45

(2) INFORMATION FOR SEQ ID NO: 550:

30 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 168 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 550:

35 Met Leu Leu Ser Leu Ala Ala Phe Ser Val Ile Ser Val Val Ser Tyr
 1 5 10 15
 Leu Ile Leu Ala Leu Leu Ser Val Thr Ile Ser Phe Arg Ile Tyr Lys
 20 25 30
 40 Ser Val Ile Gln Ala Val Gln Lys Ser Glu Glu Gly His Pro Phe Lys
 35 40 45
 45 Ala Tyr Leu Asp Val Asp Ile Thr Leu Ser Ser Glu Ala Phe His Asn
 50 55 60
 Tyr Met Asn Ala Ala Met Val His Ile Asn Arg Ala Leu Lys Leu Ile
 65 70 75 80
 50 Ile Arg Leu Phe Leu Val Glu Asp Leu Val Asp Ser Leu Lys Leu Ala
 85 90 95
 Val Phe Met Trp Leu Met Thr Tyr Val Gly Ala Val Phe Asn Gly Ile
 100 105 110
 55 Thr Leu Leu Ile Leu Ala Glu Leu Leu Ile Phe Ser Val Pro Ile Val
 115 120 125
 60 Tyr Glu Lys Tyr Lys Thr Gln Ile Asp His Tyr Val Gly Ile Ala Arg
 130 135 140

Asp Gln Thr Lys Ser Ile Val Glu Lys Ile Gln Ala Lys Leu Pro Gly
 145 150 155 160

5 -Ile Ala Lys Lys Lys Ala Glu Xaa
 165

10 (2) INFORMATION FOR SEQ ID NO: 551:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 124 amino acids

(B) TYPE: amino acid

15 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 551:

Ser Val Pro Phe His Leu Leu Val Val Leu Arg Ser Arg Ala Val Arg
 1 5 10 15

20 Ala Arg Arg Arg Arg Glu Pro Arg Ser Leu Pro Arg Pro Gly Asp Glu
 20 25 30

25 Glu Leu Gln Leu Leu Leu Cys Gly Ala Arg Ser Asp Phe Leu Glu Arg
 35 40 45

Cys Glu Glu Asp Trp Val Cys Leu Trp His His Ala Asp His Ala Ala
 50 55 60

30 Phe Pro Gly Ser Phe Gln Cys His Gln Cys Gly Phe Leu Pro His Pro
 65 70 75 80

Gly Ser Ser Leu Cys His His Gln Leu Gln Asp Leu Gln Val Arg His
 85 90 95

35 Pro Ser Cys Thr Glu Val Arg Arg Arg Pro Ser Ile Gln Ser Leu Pro
 100 105 110

40 Gly Arg Arg His Tyr Ser Val Leu Arg Ser Phe Pro
 115 120

45 (2) INFORMATION FOR SEQ ID NO: 552:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 177 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 552:

Met Val His Leu Leu Val Leu Ser Gly Ala Trp Gly Met Gln Met Trp
 1 5 10 15

55 Val Thr Phe Val Ser Gly Phe Leu Leu Phe Arg Ser Leu Pro Arg His
 20 25 30

Thr Phe Gly Leu Val Gln Ser Lys Leu Phe Pro Phe Tyr Phe His Ile
 35 40 45

60

679

Ser Met Gly Cys Ala Phe Ile Asn Leu Cys Ile Leu Ala Ser Gln His
 50 55 60

5 Ala Trp Ala Gln Leu Thr Phe Trp Glu Ala Ser Gln Leu Tyr Leu Leu
 65 70 75 80

Phe Leu Ser Leu Thr Leu Ala Thr Val Asn Ala Arg Trp Leu Glu Pro
 85 90 95

10 Arg Thr Thr Ala Ala Met Trp Ala Leu Gln Thr Val Glu Lys Glu Arg
 100 105 110

Gly Leu Gly Gly Glu Val Pro Gly Ser His Gln Gly Pro Asp Pro Tyr
 115 120 125

15 Arg Gln Leu Arg Glu Lys Asp Pro Lys Tyr Ser Ala Leu Arg Gln Asn
 130 135 140

20 Phe Phe Arg Tyr His Gly Leu Ser Ser Leu Cys Asn Leu Gly Cys Val
 145 150 155 160

Leu Ser Asn Gly Leu Cys Leu Ala Gly Leu Ala Leu Glu Ile Arg Ser
 165 170 175

25 Leu

30 (2) INFORMATION FOR SEQ ID NO: 553:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 72 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 553:

Met Ala Phe Ile Leu Leu Phe Tyr Cys Leu Met Thr Phe Leu Ser Leu
 1 5 10 15

40 Glu Gln Asn Ser Ala Thr Val Glu Pro Ser Ser His Glu Ile Leu His
 20 25 30

45 Leu Leu Gln Asn Cys Phe Glu Leu Leu Arg Thr Ser Thr Ser Gln Cys
 35 40 45

Thr Glu Gly Ile Pro Cys Ala Lys Ile Pro Glu Trp Val Thr His Leu
 50 55 60

50 Thr Trp Gln Thr Leu Lys Asn Ser
 65 70

55 (2) INFORMATION FOR SEQ ID NO: 554:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 45 amino acids

(B) TYPE: amino acid

60 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 554:

Val Leu Arg Ile Ile Cys Leu Trp Pro Cys Gly Thr Thr Leu Pro Leu
 1 5 10 15
 Val Glu Lys Ala His Asp Ser His Ser Ala Asp Pro Val Cys Pro Gly
 20 25 30
 Leu Thr Ala His Leu Pro Val Leu Leu Tyr Val Gln Leu
 35 40 45

(2) INFORMATION FOR SEQ ID NO: 555:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 251 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 555:

Met Lys His Ala Asp Pro Arg Ile Gln Gly Tyr Pro Leu Met Gly Ser
 1 5 10 15
 Pro Leu Leu Met Thr Ser Ile Leu Leu Thr Tyr Val Tyr Phe Val Leu
 20 25 30
 Ser Leu Gly Pro Arg Ile Met Ala Asn Arg Lys Pro Phe Gln Leu Arg
 35 40 45
 Gly Phe Met Ile Val Tyr Asn Phe Ser Leu Val Ala Leu Ser Leu Tyr
 50 55 60
 Ile Val Tyr Glu Phe Leu Met Ser Gly Trp Leu Ser Thr Tyr Thr Trp
 65 70 75 80
 Arg Cys Asp Pro Gln Asp Cys Thr Leu Gly Gln Cys Pro Ser Val Pro
 85 90 95
 Ser Pro Xaa Thr Pro Val Thr Lys Ala Tyr Val Val Arg Thr Glu Gln
 100 105 110
 Gly Thr Gly Pro Pro Leu Pro Thr Ala Ala Leu Gln Gly Pro Arg Leu
 115 120 125
 Trp Phe Leu Thr His Phe Pro Arg Ala Ala Pro Gly Met Trp Pro His
 130 135 140
 Cys Cys Leu Pro Leu Gln Ser Trp Gly Leu Lys Gly Leu Tyr Ser Tyr
 145 150 155 160
 Phe Pro Leu Pro Ala Leu Lys Leu Gly Arg Gly Ala Leu Arg Ala Gly
 165 170 175
 Pro Thr Lys Gly Leu Val Ala Phe Phe Leu Thr Gln Lys Arg Ser Ala
 180 185 190
 Ile Met Ser Leu Trp Thr Gln Ser His Ser Ser Thr Pro His Thr Glu
 195 200 205

681

Ala Val Ala Ser Gly Pro Lys Val Arg Val Gly Gly Gly Leu Gly Ile
 210 215 220

5 Gln Pro Val Glu Ala Ala Tyr Ser Thr Cys Val Leu Ile Lys Ser Asp
 225 230 235 240

Arg Gly Asn His Glu Lys Lys Lys Lys Lys Lys
 245 250

10

(2) INFORMATION FOR SEQ ID NO: 556:

15 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 19 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 556:

20 Gly Leu Ala Gly Leu Cys Gly Gln Leu Ser Ser Pro Ala Leu Cys Val
 1 5 10 15

Asn Arg Leu

25

(2) INFORMATION FOR SEQ ID NO: 557:

30 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 217 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 557:

35 Met Ile Thr Glu Lys Trp Gly Leu Asn Met Glu Tyr Cys Arg Gly Gln
 1 5 10 15

40 Ala Tyr Ile Xaa Ser Ser Gly Phe Ser Ser Lys Met Lys Val Val Ala
 20 25 30

Ser Arg Leu Leu Glu Lys Tyr Pro Gln Ala Ile Tyr Thr Leu Cys Ser
 35 40 45

45 Ser Cys Ala Leu Asn Met Trp Leu Ala Lys Ser Val Pro Val Met Gly
 50 55 60

50 Val Ser Val Ala Leu Gly Thr Ile Glu Glu Val Cys Ser Phe Phe His
 65 70 75 80

Arg Ser Pro Gln Leu Leu Glu Leu Asp Asn Val Ile Ser Val Leu
 85 90 95

55 Phe Gln Asn Ser Lys Glu Arg Gly Lys Glu Leu Lys Glu Ile Cys His
 100 105 110

Ser Gln Trp Thr Gly Arg His Asp Ala Phe Glu Ile Leu Val Glu Leu
 115 120 125

60 Leu Gln Ala Leu Val Leu Cys Leu Asp Gly Ile Asn Ser Asp Thr Asn

682

130 135 140

Ile Arg Trp Asn Asn Tyr Ile Ala Gly Arg Ala Phe Val Leu Cys Ser
 145 150 155 160

5 - Ala Val Ser Asp Phe Asp Phe Ile Val Thr Ile Val Val Leu Lys Asn
 165 170 175

Val Leu Ser Phe Thr Arg Ala Phe Gly Lys Asn Leu Gln Gly Gln Thr
 10 180 185 190

Ser Asp Val Phe Phe Ala Ala Gly Ser Leu Thr Ala Val Leu His Ser
 195 200 205

15 Leu Asn Glu Val Ile Gly Lys Tyr Xaa
 210 215

20 (2) INFORMATION FOR SEQ ID NO: 558:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 82 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 558:

Leu Leu Lys Val Leu Cys Ile Leu Pro Val Met Lys Val Glu Asn Glu
 1 5 10 15

30 Arg Tyr Glu Asn Gly Arg Lys Arg Leu Lys Ala Tyr Leu Arg Asn Thr
 20 25 30

Leu Thr Asp Gln Arg Ser Ser Asn Leu Ala Leu Leu Asn Ile Asn Phe
 35 35 40 45

Asp Ile Lys His Asp Leu Asp Leu Met Val Asp Thr Tyr Ile Lys Leu
 50 55 60

40 Tyr Thr Ser Lys Ser Glu Leu Pro Thr Asp Asn Ser Glu Thr Val Glu
 65 70 75 80

Asn Thr

45

(2) INFORMATION FOR SEQ ID NO: 559:

50 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 95 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 559:

55 Met Val Leu Ile Leu Leu Asn Leu Leu Leu Gly Gln Phe Ser Cys Met
 1 5 10 15

60 Ser Pro Ala Ser His His Cys His Pro Leu Pro Thr Glu Met Pro Cys
 20 25 30

683

Ser Ser Asp Trp Gly Phe Asp Ser His Thr Val Tyr Pro Ser Cys Val
 35 40 45

5 Asp Ala Leu Leu Pro Lys Pro Ser Ala Asn Ser Phe Pro Asn Gly Ser
 50 55 60

Cys His Cys Gln Gly Leu Tyr Asn Gln Gln Gln Gln Asn Leu His Ala
 65 70 75 80

10 Ala Glu Gly Pro Ala Ser Leu Arg Cys Asn Lys Tyr Val Ser Thr
 85 90 95

15

(2) INFORMATION FOR SEQ ID NO: 560:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 54 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 560:

20 Met Ile Pro Ala Tyr Ser Lys Asn Arg Ala Tyr Ala Ile Phe Phe Ile
 1 5 10 15

Val Phe Thr Val Ile Gly Asp Ala Pro Gly Ala Val Leu Ser Cys Ala
 20 25 30

30 Gly His Pro Cys Val Gly Phe Ala Ala Val Leu Val Ala Pro Leu Thr
 35 40 45

Val Ala Val Ser Ser Xaa
 50

35

(2) INFORMATION FOR SEQ ID NO: 561:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 108 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 561:

40

45 Met Glu Val Pro Pro Pro Ala Pro Arg Ser Phe Leu Cys Arg Ala Leu
 1 5 10 15

50 Cys Leu Phe Pro Arg Val Phe Ala Ala Glu Ala Val Thr Ala Asp Ser
 20 25 30

Glu Val Leu Glu Glu Arg Gln Lys Arg Leu Pro Tyr Val Pro Glu Pro
 35 40 45

55 Tyr Tyr Pro Glu Ser Gly Trp Asp Arg Leu Arg Glu Leu Phe Gly Lys
 50 55 60

Asp Thr Val Asn Thr Ser Leu Asn Val Tyr Arg Asn Lys Asp Ala Leu
 65 70 75 80

60

Ser His Phe Val Ile Ala Gly Ala Val Thr Gly Ser Leu Phe Arg Ile
85 90 95

5 Asn Val Gly Leu Arg Gly Trp Trp Leu Val Ala Xaa
100 105

(2) INFORMATION FOR SEQ ID NO: 562:

10

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 50 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

15

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 562:

Met Asn Trp Gly Leu Ser Ile Trp Leu His Tyr Tyr Glu Lys Lys Lys
1 5 10 15

20

Glu Gln Val Phe Leu Val Ile Leu Ala His Val Val Arg Arg Cys Ala
20 25 30

Ser Asp Gly Ile Leu Gln Phe Glu Ser Ser Leu Leu Lys Met Arg Arg
35 40 45

25

Ala Pro
50

30

(2) INFORMATION FOR SEQ ID NO: 563:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 253 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 563:

40 Met Val Lys Val Cys Asn Asp Ser Asp Arg Trp Ser Leu Ile Ser Leu
1 5 10 15

Ser Asn Asn Ser Gly Lys Asn Val Glu Leu Lys Phe Val Asp Ser Leu
20 25 30

45

Arg Arg Gln Phe Glu Phe Ser Val Asp Ser Phe Gln Ile Lys Leu Asp
35 40 45

Ser Leu Leu Leu Phe Tyr Glu Cys Ser Glu Asn Pro Met Thr Glu Thr
50 55 60

50

Phe His Pro Thr Ile Ile Gly Glu Ser Val Tyr Gly Asp Phe Gln Glu
65 70 75 80

55

Ala Phe Asp His Leu Cys Asn Lys Ile Ile Ala Thr Arg Asn Pro Glu
85 90 95

Glu Ile Arg Gly Gly Gly Leu Leu Lys Tyr Cys Asn Leu Leu Val Arg
100 105 110

60

Gly Phe Arg Pro Ala Ser Asp Glu Ile Lys Thr Leu Gln Arg Tyr Met

685

115 120 125

Cys Ser Arg Phe Phe Ile Asp Phe Ser Asp Ile Gly Glu Gln Gln Arg.
 130 135 140

5 - Lys Leu Glu Ser Tyr Leu Gln Asn His Phe Val Gly Leu Glu Asp Arg
 145 150 155 160

10 Lys Tyr Glu Tyr Leu Met Thr Leu His Gly Val Val Asn Glu Ser Thr
 165 170 175

Val Cys Leu Met Gly His Glu Arg Arg Gln Thr Leu Asn Leu Ile Thr
 180 185 190

15 Met Leu Ala Ile Arg Val Leu Ala Asp Gln Asn Val Ile Pro Asn Val
 195 200 205

Ala Asn Val Thr Cys Tyr Tyr Gln Pro Ala Pro Tyr Val Ala Asp Ala
 210 215 220

20 Asn Phe Ser Asn Tyr Tyr Ile Ala Gln Val Gln Pro Val Phe Thr Cys
 225 230 235 240

25 Gln Gln Gln Thr Tyr Ser Thr Trp Leu Pro Cys Asn Xaa
 245 250

30 (2) INFORMATION FOR SEQ ID NO: 564:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 18 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 564:

Met Ser Phe Leu Met Trp Leu Met Ser Leu Ala Ile Thr Ser Gln Pro
 1 5 10 15

40 Pro Met

45 (2) INFORMATION FOR SEQ ID NO: 565:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 80 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 565:

Met Ala Pro Lys Gly Lys Val Gly Thr Arg Gly Lys Lys Gln Ile Phe
 1 5 10 15

55 Glu Glu Asn Arg Glu Thr Leu Lys Phe Tyr Leu Arg Ile Ile Leu Gly
 20 25 30

60 Ala Asn Ala Ile Tyr Cys Leu Val Thr Leu Val Phe Phe Tyr Ser Ser
 35 40 45

Ala Ser Phe Trp Ala Trp Leu Ala Leu Gly Phe Ser Leu Ala Val Tyr
50 55 60

5 Gly Ala Ser Tyr His Ser Met Ser Ser Met Ala Arg Ala Ala Phe Phe
65 70 75 80

10

(2) INFORMATION FOR SEQ ID NO: 566:

15

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 73 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 566:

20

His Leu Lys Asp Val Ile Leu Leu Thr Ala Ile Val Gln Val Leu Ser
1 5 10 15

25

Cys Phe Ser Leu Tyr Val Trp Ser Phe Trp Leu Leu Ala Pro Gly Arg
20 25 30

Ala Leu Tyr Leu Leu Trp Val Asn Val Leu Gly Pro Trp Phe Thr Ala
35 40 45

30

Asp Ser Gly Thr Pro Ala Pro Glu His Asn Glu Lys Arg Gln Arg Arg
50 55 60

Gln Glu Arg Arg Gln Met Lys Arg Leu
65 70

35

(2) INFORMATION FOR SEQ ID NO: 567:

40

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 263 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 567:

45

Met Asp Cys Pro Ala Leu Pro Pro Gly Trp Lys Lys Glu Glu Val Ile
1 5 10 15

50

Arg Lys Ser Gly Leu Ser Ala Gly Lys Ser Asp Val Tyr Tyr Phe Ser
20 25 30

Pro Ser Gly Lys Lys Phe Arg Ser Lys Pro Gln Leu Ala Arg Tyr Leu
35 40 45

55

Gly Asn Thr Val Asp Leu Ser Ser Phe Asp Phe Arg Thr Gly Lys Met
50 55 60

Met Pro Ser Lys Leu Gln Lys Asn Lys Gln Arg Leu Arg Asn Asp Pro
65 70 75 80

60

[illegible]

(2) INFORMATION FOR SEQ ID NO: 568:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 70 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 568:

[illegible]

(2) INFORMATION FOR SEQ ID NO: 569:

5

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 34 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

10

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 569:

Met Pro Val Thr Ser Lys Arg Thr Leu Phe Phe Pro Asp Pro Cys Ser
1 5 10 15

15

Tyr Asp Thr Pro Pro Pro Asp Cys His Cys His Ser Phe Arg Ala Glu
20 25 30

Leu Leu

20

(2) INFORMATION FOR SEQ ID NO: 570:

25

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 104 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 570:

Met Asn Ser Arg Gly Met Trp Leu Thr Tyr Ala Leu Gly Val Gly Leu
1 5 10 15

35

Leu His Ile Val Leu Leu Ser Ile Pro Phe Phe Ser Val Pro Val Ala
20 25 30

Trp Thr Leu Thr Asn Ile Ile His Asn Leu Gly Met Tyr Val Phe Leu
35 40 45

40

His Ala Val Lys Gly Thr Pro Phe Glu Thr Pro Asp Gln Gly Lys Ser
50 55 60

Lys Ala Pro Asn Ser Leu Gly Thr Thr Gly Leu Trp Ser Thr Val Tyr
65 70 75 80

45

Ile Phe Thr Glu Val Phe His Asn Phe Ser Asn Asn Ser Ile Phe Ser
85 90 95

Gly Lys Phe Leu Tyr Glu Val Xaa
100

50

(2) INFORMATION FOR SEQ ID NO: 571:

55

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 132 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 571:

Met Trp Leu Thr Tyr Ala Leu Gly Val Gly Leu Leu His Ile Val Leu
 1 5 10 15
 5 Leu Ser Ile Pro Phe Phe Ser Val Pro Val Ala Trp Thr Leu Thr Asn
 20 25 30
 Ile Ile His Asn Leu Gly Met Tyr Val Phe Leu His Ala Val Lys Gly
 35 40 45
 10 Thr Pro Phe Glu Thr Pro Asp Gln Gly Lys Ala Arg Leu Leu Thr His
 50 55 60
 Trp Glu Gln Leu Asp Tyr Gly Val Gln Phe Thr Ser Ser Arg Lys Phe
 15 65 70 75 80
 Phe Thr Ile Ser Pro Ile Ile Leu Tyr Phe Leu Ala Ser Phe Tyr Thr
 85 90 95
 20 Lys Tyr Asp Pro Thr His Phe Ile Leu Asn Thr Ala Ser Leu Leu Ser
 100 105 110
 Val Leu Ile Pro Lys Met Pro Gln Leu His Gly Val Arg Ile Phe Gly
 115 120 125
 25 Ile Asn Lys Tyr
 130

30

(2) INFORMATION FOR SEQ ID NO: 572:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 32 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 572:

35
 40 Met Asn Lys Trp Ile Cys Glu Met His Cys Tyr Leu Val Leu Leu Ser
 1 5 10 15
 Val Cys Ser Pro Ser Ala Leu Arg Arg Val Arg His Thr Leu Ser Arg
 20 25 30

45

50

(2) INFORMATION FOR SEQ ID NO: 573:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 28 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 573:

55
 60 Met Pro Val Leu Ser Leu Leu Cys Thr Leu Ile Val Ser Phe Gln Ser
 1 5 10 15

Ala Asp Ser Cys Glu Val Phe Leu Asn Cys Ser Leu
20 25

5

(2) INFORMATION FOR SEQ ID NO: 574:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 40 amino acids

10

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 574:

15 Met Lys Val Ser Thr Met Leu Trp Phe Leu Cys Trp Glu Gln Ser His
1 5 10 15

Phe Leu Arg Glu Trp Glu Asp Leu Ser Thr Phe Leu Ile Leu Ile Gln
20 25 30

20 Met Glu Cys Gln Tyr Gly Asn Ser
35 40

25

(2) INFORMATION FOR SEQ ID NO: 575:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 30 amino acids

30

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 575:

35 Met Gly Leu Pro Leu Met Ala Leu Met Trp Ser Thr Leu Pro Ala Ser
1 5 10 15

Ala Gly Val Asn Phe Ile Leu Ala Leu Pro Leu Leu Xaa Leu
20 25 30

40

(2) INFORMATION FOR SEQ ID NO: 576:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 29 amino acids

45

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 576:

50 Met Lys Arg Gly Cys Leu Gly Leu Leu Phe Phe Ser Cys Cys Ser Ser
1 5 10 15

Ala Pro Thr Met Leu Leu Cys Asp Tyr Leu Asn Trp Phe
20 25

55

(2) INFORMATION FOR SEQ ID NO: 577:

(i) SEQUENCE CHARACTERISTICS:

60

(A) LENGTH: 92 amino acids

691

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 577:

5 Met Lys Leu Leu Leu Gly Ile Ala Leu Leu Ala Tyr Val Ala Ser Val
 1 5 10 15

Trp Gly Asn Phe Val Asn Met Arg Ser Ile Gln Glu Asn Gly Glu Leu
 20 25 30

10 Lys Ile Glu Ser Lys Ile Glu Glu Met Val Glu Pro Leu Arg Glu Lys
 35 40 45

Ile Arg Asp Leu Glu Lys Ser Phe Thr Gln Lys Tyr Pro Pro Val Lys
 15 50 55 60

Phe Leu Ser Glu Lys Asp Arg Lys Arg Ile Leu Xaa Asn Arg Arg Arg
 65 70 75 80

20 Xaa Val Arg Gly Leu Pro Ser Xaa Leu Thr Asn Ser
 85 90

25 (2) INFORMATION FOR SEQ ID NO: 578:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 42 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 578:

Met Lys Phe Ser Leu Val Leu Leu Ile Lys Ile Ile Ser Phe Glu Arg
 1 5 10 15

35 Leu Leu Ile Phe Leu Phe Pro Leu Ser Phe Leu Pro Asn Ile Trp Arg
 20 25 30

Arg Val Met Val Asn Leu Asn Ile Leu Phe
 40 35 40

45 (2) INFORMATION FOR SEQ ID NO: 579:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 70 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 579:

Leu Ala Gln Glu Cys Pro Pro His Ile Pro Ser Ser Phe Phe Leu Val
 1 5 10 15

55 Lys Leu Leu Phe Ile Pro Trp Leu Ala Ser Leu Leu Pro Pro Leu Ser
 20 25 30

Thr Phe Thr Ser Asp Phe Tyr Phe Met Glu Phe Gly Ile Glu Val Lys
 35 40 45

60

Leu Gln Gln Cys Arg Gln His Gln Val Leu Gln Glu Lys Asn Thr Lys
 50 55 60

5 Lys Phe Asn Lys Lys Lys
 65 70

(2) INFORMATION FOR SEQ ID NO: 580:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 110 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 580:

Met Leu Arg Leu Leu Leu Val Ala Phe Ala Leu Val Val Val Leu
 1 5 10 15

20 Phe His Val Leu Leu Ala Pro Ile Thr Ala Leu Phe His Thr His Phe
 20 25 30

Tyr Asp Arg Leu Gln Asp Ala Gly Ser Arg Trp Pro Glu Leu Tyr Leu
 35 40 45

25 Tyr Ser Arg Ala Asp Glu Val Val Leu Ala Arg Asp Ile Glu Arg Met
 50 55 60

30 Val Glu Ala Arg Leu Ala Arg Arg Val Leu Ala Arg Ser Val Asp Phe
 65 70 75 80

Val Ser Ser Ala His Val Ser His Leu Arg Asp Tyr Pro Thr Tyr Tyr
 85 90 95

35 Thr Ser Leu Cys Val Asp Phe Met Arg Asn Cys Val Arg Cys
 100 105 110

40 (2) INFORMATION FOR SEQ ID NO: 581:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 30 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 581:

Met Phe Lys Leu Glu Glu Cys Gly Lys Thr Thr Phe Leu Leu Ser Met
 1 5 10 15

50 Ala Leu Tyr Phe Trp Trp Ile Val Gln Thr Thr Lys Gly Cys
 20 25 30

55 (2) INFORMATION FOR SEQ ID NO: 582:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 71 amino acids
 (B) TYPE: amino acid

60

693

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 582:

5 Met Glu Ser Asp Ala Leu Leu Leu Thr Ile Phe Trp Ile Ile Ala Arg
 1 5 10 15

Ser Ser Val Arg Ser Val Gly Lys Ser Ser Gln Arg Ser Phe Thr Thr
 20 25 30

10 Ile Thr Gln Leu Arg Ser Thr His Thr Gly Pro Ser Arg Arg Ser Tyr
 35 40 45

Leu Ile Trp Trp Asn Gly Gly Pro Lys Arg Thr Ile Ser Tyr Val Ser
 50 55 60

15 Arg Arg Phe Arg Ser Phe Arg
 65 70

20

(2) INFORMATION FOR SEQ ID NO: 583:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 47 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 583:

30 Val Gly Leu Phe Gln Pro Lys Thr Phe Gln Val Pro Val Thr Asp Leu
 1 5 10 15

Tyr Ile Phe Ile Lys Ile Tyr Ser Glu Ile Gly Pro Ile Met His Val
 20 25 30

35 Leu Cys Pro Gly Tyr Ser Gln Ser Pro Ser Thr Pro Pro Trp Thr
 35 40 45

40

(2) INFORMATION FOR SEQ ID NO: 584:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 39 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 584:

50 Met Trp Phe Gly Ser Asp Arg Ser Asp Leu Arg Ile Gly Thr Ala Phe
 1 5 10 15

Leu Phe Asp Leu Val Cys Asp Leu Cys Ile His Ala Trp Lys Pro Pro
 20 25 30

55 Gly Leu Val Arg Phe Ser Phe
 35

60

(2) INFORMATION FOR SEQ ID NO: 585:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 585:

Met Leu Asn Thr Ala Ser Leu Asn Leu Pro Trp Lys Val Gln Leu Phe
 1 5 10 15

10 Ala His Ala

15 (2) INFORMATION FOR SEQ ID NO: 586:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 586:

Met Ser Ala Cys Leu Leu Leu Phe Leu Ala Phe Ser Trp Lys Arg Lys
 1 5 10 15

25

Gly Leu Trp Ser Gly Pro Gly
 20

30

(2) INFORMATION FOR SEQ ID NO: 587:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 69 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 587:

Met Leu Pro Pro Phe Ser Leu Val Tyr Thr His Phe Leu Val Ala Ser
 40 1 5 10 15

Leu Leu Pro Val Ile Leu Ala Val Phe Pro Asp Ser Ala Gln Ile Val
 20 25 30

Pro Leu Leu Lys Pro Ile Pro Arg Pro Gln Pro Glu Val Ile Phe Pro
 35 40 45

Ser Ser Glu Leu Leu Glu Gln Leu Leu Ser Val Gln Phe Val Trp Gln
 50 55 60

50

Ala His Thr Val Ala
 65

55

(2) INFORMATION FOR SEQ ID NO: 588:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 77 amino acids

(B) TYPE: amino acid

60

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 588:

5 Met Gly Pro Pro Met Leu Gln Glu Ile Ser Asn Leu Phe Leu Ile Leu
1 5 10 15

Leu Met Met Gly Ala Ile Phe Thr Leu Ala Ala Leu Lys Glu Ser Leu
20 25 30

10 Ser Thr Cys Ile Pro Ala Ile Val Cys Leu Gly Phe Leu Leu Leu Leu
35 40 45

Asn Val Gly Gln Leu Leu Ala Gln Thr Lys Lys Val Val Arg Pro Thr
50 55 60

15 Arg Lys Lys Thr Leu Ser Thr Phe Lys Glu Ser Trp Lys
65 70 75

20

(2) INFORMATION FOR SEQ ID NO: 589:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 155 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 589:

30 Met Ala Leu Leu Leu Ser Val Leu Arg Val Leu Leu Gly Gly Phe Phe
1 5 10 15

Ala Leu Val Gly Leu Ala Lys Leu Ser Glu Glu Ile Ser Ala Pro Val
20 25 30

35 Ser Glu Arg Met Asn Ala Leu Phe Val Gln Phe Ala Glu Val Phe Pro
35 40 45

Leu Lys Val Phe Gly Tyr Gln Pro Asp Pro Leu Asn Tyr Gln Ile Ala
50 55 60

40 Val Gly Phe Leu Glu Leu Leu Ala Gly Leu Leu Leu Val Met Gly Pro
65 70 75 80

45 Pro Met Leu Gln Glu Ile Ser Asn Leu Phe Leu Ile Leu Leu Met Met
85 90 95

Gly Ala Ile Phe Thr Leu Ala Ala Leu Lys Glu Ser Leu Ser Thr Cys
100 105 110

50 Ile Pro Ala Ile Val Cys Leu Gly Phe Leu Leu Leu Leu Asn Val Gly
115 120 125

Gln Leu Leu Ala Gln Thr Lys Lys Val Val Arg Pro Thr Arg Lys Lys
130 135 140

55 Thr Leu Ser Thr Phe Lys Glu Ser Trp Lys Xaa
145 150 155

60

(2) INFORMATION FOR SEQ ID NO: 590:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 590:

Met Pro Glu Thr Arg Leu Gly His Arg Gln Gln Phe Ala Val Phe His
 1 5 10 15

Leu Xaa Pro Val Pro Pro Cys Gly
 20

(2) INFORMATION FOR SEQ ID NO: 591:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 38 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 591:

Met Leu Thr Phe Leu Phe Ser Ala Cys Ala Thr Cys Leu Gly Lys Leu
 1 5 10 15

Ala Ser Pro Leu Ala Pro Val Gly Pro Gln Gln Arg Gly Xaa Pro Pro
 20 25 30

Gly Pro Pro Leu Leu Ser
 35

(2) INFORMATION FOR SEQ ID NO: 592:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 69 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 592:

Met Asp Pro Phe His Tyr Asp Tyr Gln Thr Leu Arg Ile Gly Gly Leu
 1 5 10 15

Val Phe Ala Val Val Leu Phe Ser Val Gly Ile Leu Leu Ile Leu Ser
 20 25 30

Arg Arg Cys Lys Cys Ser Phe Asn Gln Lys Pro Arg Ala Pro Gly Asp
 35 40 45

Glu Glu Ala Gln Val Glu Asn Leu Ile Thr Ala Asn Ala Thr Glu Pro
 50 55 60

Gln Lys Ala Glu Asn
 65

(2) INFORMATION FOR SEQ ID NO: 593:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 308 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 593:

5 Asn Leu Arg Val Arg Leu Gly Asp Val Ile Ser Ile Gln Pro Cys Pro
 1 5 10 15
 Asp Val Lys Tyr Gly Lys Arg Ile His Val Leu Pro Ile Asp Asp Thr
 20 25 30
 15 Val Glu Gly Ile Thr Gly Asn Leu Phe Glu Val Tyr Leu Lys Pro Tyr
 35 40 45
 Phe Leu Glu Ala Tyr Arg Pro Ile Arg Lys Gly Asp Ile Phe Leu Val
 50 55 60
 20 Arg Gly Gly Met Arg Ala Val Glu Phe Lys Val Val Glu Thr Asp Pro
 65 70 75 80
 Ser Pro Tyr Cys Ile Val Ala Pro Asp Thr Val Ile His Cys Glu Gly
 25 85 90 95
 Glu Pro Ile Lys Arg Glu Asp Glu Glu Glu Ser Leu Asn Glu Val Gly
 100 105 110
 30 Tyr Asp Asp Ile Gly Gly Cys Arg Lys Gln Leu Ala Gln Ile Lys Glu
 115 120 125
 Met Val Glu Leu Pro Leu Arg His Pro Ala Leu Phe Lys Ala Ile Gly
 130 135 140
 35 Val Lys Pro Pro Arg Gly Ile Leu Leu Tyr Gly Pro Pro Gly Thr Gly
 145 150 155 160
 Lys Thr Leu Ile Ala Arg Ala Val Ala Asn Glu Thr Gly Ala Phe Phe
 40 165 170 175
 Phe Leu Ile Asn Gly Pro Glu Ile Met Ser Lys Leu Ala Gly Glu Ser
 180 185 190
 45 Glu Ser Asn Leu Arg Lys Ala Phe Glu Glu Ala Glu Lys Asn Ala Pro
 195 200 205
 Ala Ile Ile Phe Ile Asp Glu Leu Asp Ala Ile Ala Pro Lys Arg Glu
 210 215 220
 50 Lys Thr His Gly Glu Val Glu Arg Arg Ile Val Ser Gln Leu Leu Thr
 225 230 235 240
 Leu Met Asp Gly Leu Lys Gln Arg Ala His Val Ile Val Met Ala Ala
 55 245 250 255
 Thr Asn Arg Pro Asn Ser Ile Asp Pro Ala Leu Arg Arg Phe Gly Arg
 260 265 270
 60 Phe Asp Arg Glu Val Asp Ile Gly Ile Pro Asp Ala Thr Gly Arg Leu

275 280 285
 Glu Ile Leu Gln Ile His Thr Lys Asn Met Lys Leu Ala Asp Asp Val.
 290 295 300
 5 -
 Asp Leu Glu Gln
 305

10

(2) INFORMATION FOR SEQ ID NO: 594:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 22 amino acids
 15 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 594:

20 Met Gln Ile Lys Leu Leu Lys Ser Val Lys Thr Val Phe Ala Ile Thr
 1 5 10 15
 Leu Leu Val Leu Phe Leu
 20

25

(2) INFORMATION FOR SEQ ID NO: 595:

(i) SEQUENCE CHARACTERISTICS:
 30 (A) LENGTH: 24 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 595:

35 Met Phe Pro Lys Phe Cys Pro Ile Leu Ser Leu Val Asp Phe Ile Ser
 1 5 10 15
 His Arg Asp Lys Pro Glu Thr Glu
 20

40

(2) INFORMATION FOR SEQ ID NO: 596:

45 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 24 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 596:

50

Met Leu Ile Glu Cys Ala Trp Gln Leu Met Phe Leu Leu Leu Lys Val
 1 5 10 15

55 Glu Gln Leu Gly Ile Leu Asp Lys
 20

60

(2) INFORMATION FOR SEQ ID NO: 597:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 597:

Met

1

10

(2) INFORMATION FOR SEQ ID NO: 598:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

15 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 598:

20 Met Cys Ile Met Ser Ala Leu Val

1

5

25 (2) INFORMATION FOR SEQ ID NO: 599:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 amino acids

(B) TYPE: amino acid

30 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 599:

Met Phe Leu Val Trp Phe Phe Trp Gly Leu Ile Ser Ala Leu Ser Asn

1

5

10

15

35

Val His Thr Pro Ser Arg Leu Pro Ala

20

25

40

(2) INFORMATION FOR SEQ ID NO: 600:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 27 amino acids

45 (B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 600:

Met Xaa Gly Leu Ser Leu Ile Leu Thr Val Thr Leu Leu Ala Val Ser

50

1

5

10

15

Asp Ser Ala Ala Thr Cys Ile Val Ala Lys Gly

20

25

55

(2) INFORMATION FOR SEQ ID NO: 601:

(i) SEQUENCE CHARACTERISTICS:

60 (A) LENGTH: 61 amino acids

700

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 601:

5 Met Trp Thr Arg Ser Ser Arg Cys Leu Leu Leu Cys Ile Pro Gly Xaa
 1 5 10 15

Ser Arg Arg Arg Arg Ala Gly Ser Gly Met Lys Pro Arg Ser Trp Ser
 20 25 30

10 Ala Trp Arg Pro Ser Gly Gly Thr Gly Thr Ser Ser Ser Gln Ser Ser
 35 40 45

15 Thr Gln Ser Arg Thr Leu Ser Ala Thr Ala Ser Pro Ala
 50 55 60

(2) INFORMATION FOR SEQ ID NO: 602:

20

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 29 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 602:

Met Arg Glu Thr Ser Ile Arg Val Leu Leu Met Leu Pro Ala Leu Glu
 1 5 10 15

30 Ser Thr Ser Gly Leu Ser Ala Phe Met Gly Leu Gly Thr
 20 25

35

(2) INFORMATION FOR SEQ ID NO: 603:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 69 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

40

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 603:

Met Pro Pro Lys Gln Glu Leu Gly Ser Gly Val Gly Glu Leu Ala Lys
 1 5 10 15

45 Asn Ser Lys Arg Gln His Trp Asn His Arg Trp Lys Lys Tyr Leu Lys
 20 25 30

50 Leu Ile Arg Trp Glu Asp Gly Leu Leu Leu Glu Gly Leu Leu Leu Val
 35 40 45

Leu Glu His Cys Ala Thr Met Ala Trp Asp Cys Leu Met Arg Leu Glu
 50 55 60

55 Leu Leu Lys Arg Leu
 65

60

(2) INFORMATION FOR SEQ ID NO: 604:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 604:

Lys Ile Val Tyr Ile Leu Gly Asn Pro Leu Lys Phe Asn Ser Arg Val
 1 5 10 15

Ile His His Leu Val Leu Leu Gln
 20

(2) INFORMATION FOR SEQ ID NO: 605:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 35 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 605:

Met Asn Leu His Gln Arg Arg Leu Leu Leu Ile Gly His Leu Met Thr
 1 5 10 15

Leu Val Lys Ala Ser Lys Ser Phe Ser Phe Thr Glu Ile Thr Ser Ser
 20 25 30

Arg Lys Lys
 35

(2) INFORMATION FOR SEQ ID NO: 606:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 130 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 606:

Leu Leu Gly Tyr Gly Leu Phe Gly His Cys Ile Val Leu Phe Ile Thr
 1 5 10 15

Tyr Asn Ile His Leu His Ala Leu Phe Tyr Leu Phe Trp Leu Leu Val
 20 25 30

Gly Gly Leu Ser Thr Leu Arg Met Val Ala Val Leu Val Ser Arg Thr
 35 40 45

Val Gly Pro Thr Gln Arg Leu Leu Leu Cys Gly Thr Leu Ala Ala Leu
 50 55 60

His Met Leu Phe Leu Leu Tyr Leu His Phe Ala Tyr His Lys Val Xaa
 65 70 75 80

Glu Gly Ile Leu Asp Thr Leu Glu Gly Pro Asn Ile Pro Pro Ile Gln
 85 90 95

Arg Val Pro Arg Asp Ile Pro Ala Met Leu Pro Ala Ala Arg Leu Pro
 100 105 110
 5 Thr Thr Val Leu Asn Ala Thr Ala Lys Ala Val Ala Val Thr Leu Gln
 115 120 125
 Ser His
 130

10

(2) INFORMATION FOR SEQ ID NO: 607:

15 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 23 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 607:

20 Met Leu Val Ile Phe Leu Phe Thr Ser Leu Leu Lys Ile Pro Ser Ser
 1 5 10 15
 Val Pro Gly Leu Ile Asn Val
 20

25

(2) INFORMATION FOR SEQ ID NO: 608:

30 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 6 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 608:

35

Glu Leu Asp Tyr Ile Leu
 1 5

40

(2) INFORMATION FOR SEQ ID NO: 609:

45 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 232 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 609:

50 Met Ala Pro Pro Gly Trp Gln Xaa Xaa Xaa Xaa Xaa Trp Leu Ala Cys
 1 5 10 15

Pro Asp Arg Gly Glu Leu Ser Ser Arg Ser Pro Pro Cys Arg Leu Ala
 20 25 30

55 Arg Trp Ala Glu Gly Asp Arg Glu Thr Arg Thr Cys Leu Leu Glu Leu
 35 40 45

Ser Ala Gln Ser Trp Gly Gly Arg Phe Arg Arg Ser Ser Ala Val Ser
 50 55 60

60

703

Ala Gly Ser Pro Ser Arg Leu His Phe Leu Pro Gln Pro Leu Leu Leu
65 70 75 80

Arg Ser Ser Gly Ile Pro Ala Ala Ala Thr Pro Trp Pro Gln Pro Ala
5 85 90 95

Gly Leu Pro Val Arg Pro Thr Pro Thr Arg Thr Gly Glu Glu Asp Arg
100 105 110

Thr Leu Asp Ile Ser Ile Cys Thr Glu Val Leu Ala Gly Thr Glu Gln
10 115 120 125

Pro Pro Pro Pro Arg Met Thr Ser Pro Ser Ser Ser Pro Val Phe Arg
130 135 140

15 Leu Glu Thr Leu Asp Gly Gly Gln Glu Asp Gly Ser Glu Ala Asp Arg
145 150 155 160

Gly Lys Leu Asp Phe Gly Ser Gly Leu Pro Pro Met Glu Ser Gln Phe
20 165 170 175

Gln Gly Glu Asp Arg Lys Phe Ala Pro Ser Asp Lys Ser Gln Pro Pro
180 185 190

25 Thr Thr Glu Arg Glu Gln Val Pro Val Ser Arg Ile Gln Thr Asp Leu
195 200 205

Thr Glu Ile Gly Ser Ser Met Arg Ser Pro Gly Val Ser Pro Arg Ile
210 215 220

30 Trp Leu Asp Phe Gln Ser Thr Xaa
225 230

35

(2) INFORMATION FOR SEQ ID NO: 610:

(i) SEQUENCE CHARACTERISTICS:

40 (A) LENGTH: 34 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 610:

45 Met Val Leu Leu Leu Leu Leu Ala Tyr Val Leu Leu Thr Tyr Ile Leu
1 5 10 15

Leu Leu Asn Met Leu Ile Ala Leu Met Xaa Arg Asp Arg Gln Gln Cys
20 25 30

50 Arg His

55

(2) INFORMATION FOR SEQ ID NO: 611:

(i) SEQUENCE CHARACTERISTICS:

60 (A) LENGTH: 21 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 611:

Met Val Phe Glu Gly Phe Ser Ser Ala Phe Cys Leu Ser Ser Thr Ala
 1 5 10 15
 5 -
 Pro Thr Ser His Pro
 20

10

(2) INFORMATION FOR SEQ ID NO: 612:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids

15

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 612:

20 Gly Lys Lys Asn Gln Leu Leu Val Ile
 1 5

25

(2) INFORMATION FOR SEQ ID NO: 613:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 29 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

30

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 613:

Met Val Trp Val Leu Trp Ser Ala Pro Ser Leu Ala Pro Pro Trp Val
 1 5 10 15

35

Gly Pro Cys Trp Pro Ser Thr Gly Asn Cys Cys Leu Cys
 20 25

40

(2) INFORMATION FOR SEQ ID NO: 614:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 30 amino acids

45

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 614:

Met Ala Lys Arg Ser Pro Gly Gly Cys Gly Ser Gly Leu Ile Leu Leu
 1 5 10 15

50

Cys Cys Gln Pro Cys Arg Pro Thr Ser Ser Ala Pro Met Arg
 20 25 30

55

(2) INFORMATION FOR SEQ ID NO: 615:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 113 amino acids

60

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 615:

5 1 5 10 15
 Ile Thr Ile Ala Ile Gln Met Ile Cys Leu Val Asn Xaa Glu Leu Tyr
 Pro Thr Phe Val Arg Asn Xaa Gly Val Met Val Cys Ser Ser Leu Cys
 20 25 30
 10 Asp Ile Gly Gly Ile Ile Thr Pro Phe Ile Val Phe Arg Leu Arg Glu
 35 40 45
 Val Trp Gln Ala Leu Pro Leu Ile Leu Phe Ala Val Leu Gly Leu Leu
 50 55 60
 15 Ala Ala Gly Val Thr Leu Leu Leu Pro Glu Thr Lys Gly Val Ala Leu
 65 70 75 80
 Pro Glu Thr Met Lys Asp Ala Glu Asn Leu Gly Arg Lys Ala Lys Pro
 85 90 95
 Lys Glu Asn Thr Ile Tyr Leu Lys Val Gln Thr Ser Glu Pro Ser Gly
 100 105 110
 25 Thr

30 (2) INFORMATION FOR SEQ ID NO: 616:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 616:

40 Thr Met Lys Asp Ala Glu Asn Leu Gly Arg Lys Ala Lys Pro Lys Glu
 1 5 10 15
 Asn Thr

45 (2) INFORMATION FOR SEQ ID NO: 617:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 617:

55 Pro Arg Val Arg Asn Ser Pro Glu Asp Leu Gly Leu Ser Leu Thr Gly
 1 5 10 15
 Asp Ser Cys Lys Leu
 20

60

(2) INFORMATION FOR SEQ ID NO: 618:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 52 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 618:

5 Gln Ala Asp Asp Leu Gln Ala Thr Val Ala Ala Leu Cys Val Leu Arg
 1 5 10 15
 Gly Gly Gly Pro Trp Ala Gly Ser Trp Leu Ser Pro Lys Thr Pro Gly
 20 25 30
 15 Ala Met Gly Gly Asp Leu Val Leu Gly Leu Gly Ala Leu Arg Arg Arg
 35 40 45
 20 Lys Arg Leu Leu
 50

(2) INFORMATION FOR SEQ ID NO: 619:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 232 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 619:

25 Glu Gln Glu Lys Ser Leu Ala Gly Trp Ala Leu Val Leu Ala Xaa Xaa
 1 5 10 15
 35 Gly Ile Gly Leu Met Val Leu His Ala Glu Met Leu Trp Phe Gly Gly
 20 25 30
 Cys Ser Ala Val Asn Ala Thr Gly His Leu Ser Asp Thr Leu Trp Leu
 35 40 45
 40 Ile Pro Ile Thr Phe Leu Thr Ile Gly Tyr Gly Asp Val Val Pro Gly
 50 55 60
 Thr Met Trp Gly Lys Ile Val Cys Leu Cys Thr Gly Val Met Gly Val
 45 65 70 75 80
 Cys Cys Thr Ala Leu Leu Val Ala Val Val Ala Arg Lys Leu Glu Phe
 85 90 95
 50 Asn Lys Ala Glu Lys His Val His Asn Phe Met Met Asp Ile Gln Tyr
 100 105 110
 Thr Lys Glu Met Lys Glu Ser Ala Ala Arg Val Leu Gln Glu Ala Trp
 115 120 125
 55 Met Phe Tyr Lys His Thr Arg Arg Lys Glu Ser His Ala Ala Arg Xaa
 130 135 140
 60 His Gln Arg Xaa Leu Leu Ala Ala Ile Asn Ala Phe Arg Gln Val Arg
 145 150 155 160

Leu Lys His Arg Lys Leu Arg Glu Gln Val Asn Ser Met Val Asp Ile
 165 170 175
 5 Ser Lys Met His Met Ile Leu Tyr Asp Leu Gln Gln Asn Leu Ser Ser
 180 185 190
 Ser His Arg Ala Leu Glu Lys Gln Ile Asp Thr Leu Ala Gly Lys Leu
 195 200 205
 10 Asp Ala Leu Thr Glu Leu Leu Ser Thr Ala Leu Gly Pro Arg Gln Leu
 210 215 220
 Pro Glu Pro Ser Gln Gln Ser Lys
 15 225 230

20 (2) INFORMATION FOR SEQ ID NO: 620:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 36 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 620:

Tyr Gln Ala His His Val Ser Arg Asn Lys Arg Gly Gln Val Val Gly
 1 5 10 15
 30 Thr Arg Gly Gly Phe Arg Gly Cys Thr Val Trp Leu Thr Gly Leu Ser
 20 25 30
 Gly Ala Gly Lys
 35 35

(2) INFORMATION FOR SEQ ID NO: 621:

40 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 57 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 621:

Leu Gln Cys Glu Ile Cys Gly Phe Thr Cys Arg Gln Lys Ala Ser Leu
 1 5 10 15
 50 Asn Trp His Met Lys Lys His Asp Ala Asp Ser Phe Tyr Gln Phe Ser
 20 25 30
 Cys Asn Ile Cys Gly Lys Lys Phe Glu Lys Lys Asp Ser Val Val Ala
 35 40 45
 55 His Lys Ala Lys Ser His Pro Glu Val
 50 55

60 (2) INFORMATION FOR SEQ ID NO: 622:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 622:

Ile Thr Ser Thr Asp Ile Leu Gly Thr Asn Pro Glu Ser Leu Thr Gln
1 5 10 15
Pro Ser Asp

(2) INFORMATION FOR SEQ ID NO: 623:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 623:

Asn Ser Thr Ser Gly Glu Cys Leu Leu Leu Glu Ala Glu Gly Met Ser
1 5 10 15
Lys Ser Tyr

(2) INFORMATION FOR SEQ ID NO: 624:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 51 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 624:

Cys Ser Gly Thr Glu Arg Val Ser Leu Met Ala Asp Gly Lys Ile Phe
1 5 10 15
Val Gly Ser Gly Ser Ser Gly Gly Thr Glu Gly Leu Val Met Asn Ser
20 25 30
Asp Ile Leu Gly Ala Thr Thr Glu Val Leu Ile Glu Asp Ser Asp Ser
35 40 45
Ala Gly Pro
50

(2) INFORMATION FOR SEQ ID NO: 625:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 60 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 625:

Ile Gln Tyr Val Arg Cys Glu Met Glu Gly Cys Gly Thr Val Leu Ala
 1 5 10 15
 5 His Pro Arg Tyr Leu Gln His His Ile Lys Tyr Gln His Leu Leu Lys
 20 25 30
 Lys Lys Tyr Val Cys Pro His Pro Ser Cys Gly Arg Leu Phe Arg Leu
 35 40 45
 10 Gln Lys Gln Leu Leu Arg His Ala Lys His His Thr
 50 55 60

15

(2) INFORMATION FOR SEQ ID NO: 626:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 31 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 626:

20 Asp Gln Arg Asp Tyr Ile Cys Glu Tyr Cys Ala Arg Ala Phe Lys Ser
 25 1 5 10 15
 Ser His Asn Leu Ala Val His Arg Met Ile His Thr Gly Glu Lys
 20 25 30

30

(2) INFORMATION FOR SEQ ID NO: 627:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 627:

35 Arg Ser Ser Arg Ser Lys Thr Gly Ser Leu Gln Leu Ile Cys Lys Ser
 40 1 5 10 15
 Glu Pro Asn Thr Asp Gln Leu Asp Tyr
 20 25
 45

(2) INFORMATION FOR SEQ ID NO: 628:

50

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 183 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 628:

55

Leu Gln Cys Glu Ile Cys Gly Phe Thr Cys Arg Gln Lys Ala Ser Leu
 1 5 10 15
 Asn Trp His Met Lys Lys His Asp Ala Asp Ser Phe Tyr Gln Phe Ser
 20 25 30
 60

710

Cys Asn Ile Cys Gly Lys Lys Phe Glu Lys Lys Asp Ser Val Val Ala
 35 40 45
 5 His Lys Ala Lys Ser His Pro Glu Val Xaa Ile Thr Ser Thr Asp Ile
 50 55 60
 Leu Gly Thr Asn Pro Glu Ser Leu Thr Gln Pro Ser Asp Xaa Asn Ser
 65 70 75 80
 10 Thr Ser Gly Glu Cys Leu Leu Leu Glu Ala Glu Gly Met Ser Lys Ser
 85 90 95
 Tyr Xaa Cys Ser Gly Thr Glu Arg Val Ser Leu Met Ala Asp Gly Lys
 15 100 105 110
 Ile Phe Val Gly Ser Gly Ser Ser Gly Gly Thr Glu Gly Leu Val Met
 115 120 125
 20 Asn Ser Asp Ile Leu Gly Ala Thr Thr Glu Val Leu Ile Glu Asp Ser
 130 135 140
 Asp Ser Ala Gly Pro Xaa Gln Arg Asp Tyr Ile Cys Glu Tyr Cys Ala
 145 150 155 160
 25 Arg Ala Phe Lys Ser Ser His Asn Leu Ala Val His Arg Met Ile His
 165 170 175
 Thr Gly Glu Lys His Tyr Xaa
 30 180

35 (2) INFORMATION FOR SEQ ID NO: 629:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

40 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 629:

Gln Tyr Val Arg Cys Glu Met Glu Gly Cys Gly Thr Val Leu Ala His
 1 5 10 15
 45 Pro Arg Tyr Leu Gln His His Ile Lys Tyr Gln His Leu Leu Lys Lys
 20 25 30
 Lys Tyr Val Cys Pro His Pro Ser Cys Gly Arg Leu Phe Arg Leu Gln
 35 40 45
 50 Lys Gln Leu Leu Arg His Ala Lys His His Thr Asp
 50 55 60

55 (2) INFORMATION FOR SEQ ID NO: 630:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 27 amino acids

60 (B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 630:

Pro Phe Lys Asp Asp Pro Arg Asp Glu Thr Tyr Lys Pro His Leu Glu
5 - 1 5 10 15

Arg Glu Thr Pro Lys Pro Arg Arg Lys Ser Gly
20 25

10

(2) INFORMATION FOR SEQ ID NO: 631:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 110 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 631:

[illegible]

Met Leu Lys Thr Tyr Leu Ser Glu Asp Val Phe Gln His Ala Val Val
20 25 30

25

Leu Tyr Leu His Asn His Ser Tyr Ala Ser Ile Gln Ser Asp Asp Leu
35 40 45

30 Trp Asp Ser Phe Asn Glu Val Thr Asn Gln Thr Leu Asp Val Lys Arg
50 55 60

Met Met Lys Thr Trp Thr Leu Gln Lys Gly Phe Pro Leu Val Thr Val
65 70 75 80

35 Gln Lys Lys Gly Lys Glu Leu Phe Ile Gln Gln Glu Arg Phe Phe Leu
 85 90 95

Asn Met Lys Pro Glu Ile Gln Pro Ser Asp Thr Arg Tyr Met
100 105 110

40

(2) INFORMATION FOR SEO ID NO: 632:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEO ID NO: 632:

50

Leu Glu Lys Val Ala Ser Val Gly Asn Ser Arg Pro Thr Gly Gln Gln
1 5 10 15

Leu Glu Ser Leu Gly Leu Leu Ala
55 20

60

(2) INFORMATION FOR SEQ ID NO: 633:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

5 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 633:

Val His Arg Glu Glu Ala Ser Cys Tyr Cys Gln Ala Glu Pro Ser Gly
 1 5 10 15

10 Asp Leu

15 (2) INFORMATION FOR SEQ ID NO: 634:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

20 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 634:

Arg Pro Ala Leu Arg Gln Ala Gly Gly Gly Thr Arg Glu Pro Arg Gln
 1 5 10 15

25 Lys Arg Trp Ala Gly Leu
 20

30 (2) INFORMATION FOR SEQ ID NO: 635:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 635:

40 Ala Val Asn Phe Arg Pro Gln Arg Ser Gln Ser Met
 1 5 10

45 (2) INFORMATION FOR SEQ ID NO: 636:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 37 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

50 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 636:

Met Ile Thr Asp Val Gln Leu Ala Ile Phe Ala Asn Met Leu Gly Val
 1 5 10 15

55 Ser Leu Phe Leu Leu Val Val Leu Tyr His Tyr Val Ala Val Asn Asn
 20 25 30

Pro Lys Lys Gln Glu
 35

60

(2) INFORMATION FOR SEQ ID NO: 637:

5 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 342 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 637:

10

Glu Glu Met Ala Asp Ser Val Lys Thr Phe Leu Gln Asp Leu Ala Arg
 1 5 10 15

15

Gly Ile Lys Asp Ser Ile Trp Gly Ile Cys Thr Ile Ser Lys Leu Asp
 20 25 30

Ala Arg Ile Gln Gln Lys Arg Glu Gln Arg Arg Arg Arg Ala Ser
 35 40 45

20

Ser Val Leu Ala Gln Arg Arg Ala Gln Ser Ile Glu Arg Lys Gln Glu
 50 55 60

Ser Glu Pro Arg Ile Val Ser Arg Ile Phe Gln Cys Cys Ala Trp Asn
 65 70 75 80

25

Gly Gly Val Phe Trp Phe Ser Leu Leu Leu Phe Tyr Arg Val Phe Ile
 85 90 95

30

Pro Val Leu Gln Ser Val Thr Ala Arg Ile Ile Gly Asp Pro Ser Leu
 100 105 110

His Gly Asp Val Trp Ser Trp Leu Glu Phe Phe Leu Thr Ser Ile Phe
 115 120 125

35

Ser Ala Leu Trp Val Leu Pro Leu Phe Val Leu Ser Lys Val Val Asn
 130 135 140

Ala Ile Trp Phe Gln Asp Ile Ala Asp Leu Ala Phe Glu Val Ser Gly
 145 150 155 160

40

Arg Lys Pro His Pro Phe Pro Ser Val Ser Lys Ile Ile Ala Asp Met
 165 170 175

45

Leu Phe Asn Leu Leu Leu Gln Ala Leu Phe Leu Ile Gln Gly Met Phe
 180 185 190

Val Ser Leu Phe Pro Ile His Leu Val Gly Gln Leu Val Ser Leu Leu
 195 200 205

50

His Met Ser Leu Leu Tyr Ser Leu Tyr Cys Phe Glu Tyr Arg Trp Phe
 210 215 220

Asn Lys Gly Ile Glu Met His Gln Arg Leu Ser Asn Ile Glu Arg Asn
 225 230 235 240

55

Trp Pro Tyr Tyr Phe Gly Phe Gly Leu Pro Leu Ala Phe Leu Thr Ala
 245 250 255

60

Met Gln Ser Ser Tyr Ile Ile Ser Gly Cys Leu Phe Ser Ile Leu Phe
 260 265 270

Pro Leu Phe Ile Ile Ser Ala Asn Glu Ala Lys Thr Pro Gly Lys Ala
 275 280 285

5 - Tyr Leu Phe Gln Leu Arg Leu Phe Ser Leu Val Val Phe Leu Ser Asn
 290 295 300

Arg Leu Phe His Lys Thr Val Tyr Leu Gln Ser Ala Leu Ser Ser Ser
 305 310 315 320

10 Thr Ser Ala Glu Lys Phe Pro Ser Pro His Pro Ser Pro Ala Lys Leu
 325 330 335

Lys Ala Thr Ala Gly His
 15 340

(2) INFORMATION FOR SEQ ID NO: 638:

20

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 529 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 638:

Met Ala Lys Phe Met Thr Pro Val Ile Gln Asp Asn Pro Ser Gly Trp
 1 5 10 15

30 Gly Pro Cys Ala Val Pro Glu Gln Phe Arg Asp Met Pro Tyr Gln Pro
 20 25 30

Phe Ser Lys Gly Asp Arg Leu Gly Lys Val Ala Asp Trp Thr Gly Ala
 35 40 45

35 Thr Tyr Gln Asp Lys Arg Tyr Thr Asn Lys Tyr Ser Ser Gln Phe Gly
 50 55 60

40 Gly Gly Ser Gln Tyr Ala Tyr Phe His Glu Glu Asp Glu Ser Ser Phe
 65 70 75 80

Gln Leu Val Asp Thr Ala Arg Thr Gln Lys Thr Ala Tyr Gln Arg Asn
 85 90 95

45 Arg Met Arg Phe Ala Gln Arg Asn Leu Arg Arg Asp Lys Asp Arg Arg
 100 105 110

Asn Met Leu Gln Phe Asn Leu Gln Ile Leu Pro Lys Ser Ala Lys Gln
 115 120 125

50 Lys Glu Arg Glu Arg Ile Arg Leu Gln Lys Lys Phe Gln Lys Gln Phe
 130 135 140

55 Gly Val Arg Gln Lys Trp Asp Gln Lys Ser Gln Lys Pro Arg Asp Ser
 145 150 155 160

Ser Val Glu Val Arg Ser Asp Trp Glu Val Lys Glu Glu Met Asp Phe
 165 170 175

60 Pro Gln Leu Met Lys Met Arg Tyr Leu Glu Val Ser Glu Pro Gln Asp

	180	185	190
	Ile Glu Cys Cys Gly Ala Leu	Glu Tyr Tyr Asp Lys	Ala Phe Asp Arg
	195	200	205
5	Ile Thr Thr Arg Ser Glu Lys	Pro Leu Arg Xaa Xaa Lys	Arg Ile Phe
	210	215	220
10	His Thr Val Thr Thr Thr Asp Asp	Pro Val Ile Arg Lys	Leu Ala Lys
	225	230	235 240
	Thr Gln Gly Asn Val Phe Ala Thr	Asp Ala Ile Leu Ala Thr	Leu Met
	245	250	255
15	Ser Cys Thr Arg Ser Val Tyr Ser	Trp Asp Ile Val Val Gln	Arg Val
	260	265	270
	Gly Ser Lys Leu Phe Phe Asp Lys	Arg Asp Asn Ser Asp Phe	Asp Leu
	275	280	285
20	Leu Thr Val Ser Glu Thr Ala Asn	Glu Pro Pro Gln Asp Glu	Gly Asn
	290	295	300
25	Ser Phe Asn Ser Pro Arg Asn Leu	Ala Met Glu Ala Thr Tyr Ile	Asn
	305	310	315 320
	His Asn Phe Ser Gln Gln Cys Leu	Arg Met Gly Lys Glu Arg Tyr	Asn
	325	330	335
30	Phe Pro Asn Pro Asn Pro Phe Val	Glu Asp Asp Met Asp Lys	Asn Glu
	340	345	350
	Ile Ala Ser Val Ala Tyr Arg Tyr	Arg Ser Gly Lys Leu Gly	Asp Asp
	355	360	365
35	Ile Asp Leu Ile Val Arg Cys Glu	His Asp Gly Val Met Thr Gly	Ala
	370	375	380
40	Asn Gly Glu Val Ser Phe Ile Asn	Ile Lys Thr Leu Asn Glu Trp	Asp
	385	390	395 400
	Ser Arg His Cys Asn Gly Val Asp	Trp Arg Gln Lys Leu Asp Ser	Gln
	405	410	415
45	Arg Gly Ala Val Ile Ala Thr Glu	Leu Lys Asn Asn Ser Tyr Lys	Leu
	420	425	430
	Ala Arg Trp Thr Cys Cys Ala Leu	Leu Ala Gly Ser Glu Tyr Leu	Lys
	435	440	445
50	Leu Gly Tyr Val Ser Arg Tyr His	Val Lys Asp Ser Ser Arg His	Val
	450	455	460
55	Ile Leu Gly Thr Gln Gln Phe Lys	Pro Asn Glu Phe Ala Ser Gln	Ile
	465	470	475 480
	Asn Leu Ser Val Glu Asn Ala Trp	Gly Ile Leu Arg Cys Val Ile	Asp
	485	490	495
60	Ile Cys Met Lys Leu Glu Glu Gly	Lys Tyr Leu Ile Leu Lys	Asp Pro

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500                               505                               510
Asn Lys Gln Val Ile Arg Val Tyr Ser Leu Pro Asp Gly Thr Phe Ser
515                               520                               525
5 - Ser

10
(2) INFORMATION FOR SEQ ID NO: 639:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 194 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 639:

20 Lys Lys Arg His Thr Asp Val Gln Phe Tyr Thr Glu Val Gly Glu Ile
    1                               5                               10                               15

    Thr Thr Asp Leu Gly Lys His Gln His Met His Asp Arg Asp Asp Leu
        20                               25                               30

25 Tyr Ala Glu Gln Met Glu Arg Glu Met Arg His Lys Leu Lys Thr Ala
        35                               40                               45

    Phe Lys Asn Phe Ile Glu Lys Val Glu Ala Leu Thr Lys Glu Glu Leu
        50                               55                               60

30 Glu Phe Glu Val Pro Phe Arg Asp Leu Gly Phe Asn Gly Ala Pro Tyr
    65                               70                               75                               80

    Arg Ser Thr Cys Leu Leu Gln Pro Thr Ser Ser Ala Leu Val Asn Ala
35        85                               90                               95

    Thr Glu Trp Pro Pro Phe Val Val Thr Leu Asp Glu Val Glu Leu Ile
        100                               105                               110

40 His Phe Xaa Arg Val Gln Phe His Leu Lys Asn Phe Asp Met Val Ile
        115                               120                               125

    Val Tyr Lys Asp Tyr Ser Lys Lys Val Thr Met Ile Asn Ala Ile Pro
        130                               135                               140

45 Val Ala Ser Leu Asp Pro Ile Lys Glu Trp Leu Asn Ser Cys Asp Leu
    145                               150                               155                               160

    Lys Tyr Thr Glu Gly Val Gln Ser Leu Asn Trp Thr Lys Ile Met Lys
50        165                               170                               175

    Thr Ile Val Asp Asp Pro Glu Gly Phe Phe Glu Gln Gly Gly Trp Ser
        180                               185                               190

55 Phe Leu

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60 (2) INFORMATION FOR SEQ ID NO: 640:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 70 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 640:

Arg Ser Gly Leu Gly Leu Gly Ile Thr Ile Ala Phe Leu Ala Thr Leu
 1 5 10 15
 Ile Thr Gln Phe Leu Val Tyr Asn Gly Val Tyr Gln Tyr Thr Ser Pro
 20 25 30
 Asp Phe Leu Tyr Ile Arg Ser Trp Leu Pro Cys Ile Phe Phe Ser Gly
 35 40 45
 Gly Val Thr Val Gly Asn Ile Gly Arg Gln Leu Ala Met Gly Val Pro
 50 55 60
 Glu Lys Pro His Ser Asp
 65 70

(2) INFORMATION FOR SEQ ID NO: 641:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 101 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 641:

Val Thr Gln Pro Lys His Leu Ser Ala Ser Met Gly Gly Ser Val Glu
 1 5 10 15
 Ile Pro Phe Ser Phe Tyr Tyr Pro Trp Glu Leu Ala Xaa Xaa Pro Xaa
 20 25 30
 Val Arg Ile Ser Trp Arg Arg Gly His Phe His Gly Gln Ser Phe Tyr
 35 40 45
 Ser Thr Arg Pro Pro Ser Ile His Lys Asp Tyr Val Asn Arg Leu Phe
 50 55 60
 Leu Asn Trp Thr Glu Gly Gln Glu Ser Gly Phe Leu Arg Ile Ser Asn
 65 70 75 80
 Leu Arg Lys Glu Asp Gln Ser Val Tyr Phe Cys Arg Val Glu Leu Asp
 85 90 95
 Thr Arg Arg Ser Gly
 100

(2) INFORMATION FOR SEQ ID NO: 642:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 233 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 642:

	Met	Glu	Ala	Gln	Gln	Val	Asn	Glu	Ala	Glu	Ser	Ala	Arg	Glu	Gln	Leu
5	-	1					5				10					15
			Gln	Xaa	Leu	His	Asp	Gln	Ile	Ala	Gly	Gln	Lys	Ala	Ser	Lys
					20						25				30	
10		Leu	Glu	Thr	Glu	Leu	Glu	Arg	Leu	Lys	Gln	Glu	Phe	His	Tyr	Ile
				35					40					45		
		Glu	Asp	Leu	Tyr	Arg	Thr	Lys	Asn	Thr	Leu	Gln	Ser	Arg	Ile	Lys
			50					55					60			
15		Arg	Asp	Glu	Glu	Ile	Gln	Lys	Leu	Arg	Asn	Gln	Leu	Thr	Asn	Lys
			65				70					75				80
		Leu	Ser	Asn	Ser	Ser	Gln	Ser	Glu	Leu	Glu	Asn	Arg	Leu	His	Gln
20					85						90					95
		Thr	Glu	Thr	Leu	Ile	Gln	Lys	Gln	Thr	Met	Leu	Glu	Ser	Leu	Ser
					100					105					110	
25		Glu	Lys	Asn	Ser	Leu	Val	Phe	Gln	Leu	Glu	Arg	Leu	Glu	Gln	Gln
				115					120					125		
		Asn	Ser	Ala	Ser	Gly	Ser	Ser	Ser	Asn	Gly	Ser	Ser	Ile	Asn	Met
			130					135					140			
30		Gly	Ile	Asp	Asn	Gly	Glu	Gly	Thr	Arg	Leu	Arg	Asn	Val	Pro	Val
						150						155				160
		Phe	Asn	Asp	Thr	Glu	Thr	Asn	Leu	Ala	Gly	Met	Tyr	Gly	Lys	Val
35					165						170				175	
		Lys	Ala	Ala	Ser	Ser	Ile	Asp	Gln	Phe	Ser	Ile	Arg	Leu	Gly	Ile
					180					185					190	
40		Leu	Arg	Arg	Tyr	Pro	Ile	Ala	Arg	Val	Phe	Val	Ile	Ile	Tyr	Met
				195					200					205		
		Leu	Leu	His	Leu	Trp	Val	Met	Ile	Val	Leu	Leu	Thr	Tyr	Thr	Pro
			210					215					220			
45		Met	His	His	Asp	Gln	Pro	Tyr	Gly	Lys						
			225				230									

(2) INFORMATION FOR SEQ ID NO: 643:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 43 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 643:

60 Ile Arg His Glu Gln His Pro Asn Phe Ser Leu Glu Met His Ser Lys
1 5 10 15

Gly Ser Ser Leu Leu Leu Phe Leu Pro Gln Leu Ile Leu Ile Leu Pro
 20 25 30

5 - Val Cys Ala His Leu His Glu Glu Leu Asn Cys
 35 40

10 (2) INFORMATION FOR SEQ ID NO: 644:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 63 amino acids

(B) TYPE: amino acid

15 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 644:

20 Ser Phe Phe Ile Ser Glu Glu Lys Gly His Leu Leu Leu Gln Ala Glu
 1 5 10 15

Arg His Pro Trp Val Ala Gly Ala Leu Val Gly Val Ser Gly Gly Leu
 20 25 30

25 Thr Leu Thr Thr Cys Ser Gly Pro Thr Glu Lys Pro Ala Thr Lys Asn
 35 40 45

Tyr Phe Leu Lys Arg Leu Leu Gln Glu Met His Ile Arg Ala Asn
 50 55 60

30

35

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>116</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit February 26, 1997	Accession Number 97897
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">For receiving Office use only</div> <div style="padding: 10px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="border-top: 1px solid black; padding: 5px;">Authorized officer <div style="text-align: center;">Susan White PCT International Division</div></div>	<div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">For International Bureau use only</div> <div style="padding: 10px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="border-top: 1px solid black; padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>116</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209043
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center;">For receiving Office use only</div> <div style="padding: 10px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="padding: 5px;">Authorized officer <div style="text-align: center;">Susan White PCT International Division</div></div>	<div style="text-align: center;">For International Bureau use only</div> <div style="padding: 10px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>119</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit September 4, 1997	Accession Number 209235
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

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<input checked="checked" type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer Susan White PCT International Division	Authorized officer

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>122</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit February 26, 1997	Accession Number 97898
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>122</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209044
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (If the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center;">For receiving Office use only</div> <div style="padding: 10px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="border-top: 1px solid black; padding-top: 5px;">Authorized officer <div style="text-align: center;">Susan White PCT International Division</div></div>	<div style="text-align: center;">For International Bureau use only</div> <div style="padding: 10px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="border-top: 1px solid black; padding-top: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>126</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit February 26, 1997	Accession Number 97899
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (If the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<p style="text-align: center;">For receiving Office use only</p> <div style="border: 1px solid black; padding: 5px;"> <input checked="checked" type="checkbox"/> This sheet was received with the international application </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Authorized officer <div style="text-align: center;"> Susan White PCT International Division </div> </div>	<p style="text-align: center;">For International Bureau use only</p> <div style="border: 1px solid black; padding: 5px;"> <input type="checkbox"/> This sheet was received by the International Bureau on: </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Authorized officer </div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>126</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209045
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (If the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<p style="text-align: center;">For receiving Office use only</p> <div style="border: 1px solid black; padding: 5px;"> <input checked="checked" type="checkbox"/> This sheet was received with the international application </div> <div style="border: 1px solid black; padding: 5px;"> Authorized officer <div style="text-align: center;"> Susan White POT International Division </div> </div>	<p style="text-align: center;">For International Bureau use only</p> <div style="border: 1px solid black; padding: 5px;"> <input type="checkbox"/> This sheet was received by the International Bureau on: </div> <div style="border: 1px solid black; padding: 5px;"> Authorized officer </div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>130</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit April 28, 1997	Accession Number 209011
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>131</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit February 26, 1997	Accession Number 97900
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center;">For receiving Office use only</div> <div style="padding: 5px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="padding: 5px;">Authorized officer Susan White PCT International Division</div>	<div style="text-align: center;">For International Bureau use only</div> <div style="padding: 5px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>137</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit February 26, 1997	Accession Number 97901
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="border-bottom: 1px solid black; margin-bottom: 5px;">For receiving Office use only</div> <div style="display: flex; align-items: center; margin-bottom: 10px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="border-bottom: 1px solid black; margin-bottom: 10px;">Authorized officer</div> <div style="text-align: center;">Susan White PCT International Division</div>	<div style="border-bottom: 1px solid black; margin-bottom: 5px;">For International Bureau use only</div> <div style="display: flex; align-items: center; margin-bottom: 10px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="border-bottom: 1px solid black; margin-bottom: 10px;">Authorized officer</div>
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Form PCT/US/14 (July 1993)

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>131</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209046
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center;">For receiving Office use only</div> <div style="padding: 10px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="padding: 5px;">Authorized officer <div style="text-align: center;">Susan White PCT International Division</div></div>	<div style="text-align: center;">For International Bureau use only</div> <div style="padding: 10px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>137</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209047
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input checked="" type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer Susan White PCT International Division	Authorized officer

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>137</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 22, 1997	Accession Number 209076
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">For receiving Office use only</div> <div style="padding: 5px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="border-top: 1px solid black; padding: 5px;">Authorized officer Susan White PCT International Division</div>	<div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">For International Bureau use only</div> <div style="padding: 5px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="border-top: 1px solid black; padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>140</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 .. United States of America	
Date of deposit August 21, 1997	Accession Number 209215
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>160</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit February 26, 1997	Accession Number 97904
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center;">For receiving Office use only</div> <div style="padding: 10px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="padding: 5px;">Authorized officer Susan White PCT International Division</div>	<div style="text-align: center;">For International Bureau use only</div> <div style="padding: 10px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>154</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="margin-left: 100px;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) <div style="margin-left: 10px;">12301 Parklawn Drive Rockville, Maryland 20852 United States of America</div>	
Date of deposit July 3, 1997	Accession Number 209139
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="border-bottom: 1px solid black; margin-bottom: 5px;">For receiving Office use only</div> <div style="padding: 5px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="border-top: 1px solid black; padding: 5px;">Authorized officer Susan White PCT International Division</div>	<div style="border-bottom: 1px solid black; margin-bottom: 5px;">For International Bureau use only</div> <div style="padding: 5px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="border-top: 1px solid black; padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>153</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209049
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center;">For receiving Office use only</div> <div style="padding: 10px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="padding: 5px;">Authorized officer <div style="text-align: center;">Susan White PCT International Division</div></div>	<div style="text-align: center;">For International Bureau use only</div> <div style="padding: 10px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>153</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit February 26, 1997	Accession Number 97903
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center;">For receiving Office use only</div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">Authorized officer <div style="text-align: center;">Susan White PCT International Division</div></div>	<div style="text-align: center;">For International Bureau use only</div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>142</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit June 12, 1997	Accession Number 209119
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center;">For receiving Office use only</div> <div style="padding: 10px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="padding: 5px;">Authorized officer Susan White PCT International Division</div>	<div style="text-align: center;">For International Bureau use only</div> <div style="padding: 10px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>146</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit February 26, 1997	Accession Number 97902
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">For receiving Office use only</div> <div style="padding: 5px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="padding: 5px;">Authorized officer Susan White PCT International Division</div>	<div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">For International Bureau use only</div> <div style="padding: 5px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>146</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209048
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
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<div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">For receiving Office use only</div> <div style="padding: 5px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="border-top: 1px solid black; padding: 5px;">Authorized officer <div style="text-align: center;">Susan White PCT International Division</div></div>	<div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">For International Bureau use only</div> <div style="padding: 5px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="border-top: 1px solid black; padding: 5px;">Authorized officer ...</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>160</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <div style="text-align: center;">American Type Culture Collection</div>	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209050
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">For receiving Office use only</div> <div style="padding: 5px;"><input checked="checked" type="checkbox"/> This sheet was received with the international application</div> <div style="padding: 5px;">Authorized officer Susan White PCT International Division</div>	<div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">For International Bureau use only</div> <div style="padding: 5px;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div> <div style="padding: 5px;">Authorized officer</div>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>142</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>February 12, 1998</u>	Accession Number <u>209627</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

<div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">For receiving Office use only</div> <div style="display: flex; justify-content: space-between; align-items: flex-start; padding: 5px;"><div style="text-align: center;"><input checked="" type="checkbox"/> This sheet was received with the international application</div><div style="width: 80%;"></div></div> <div style="display: flex; justify-content: space-between; align-items: flex-start; padding: 5px;"><div style="text-align: center;">Authorized officer</div><div style="text-align: center;">Susan White PCT International Division</div></div>	<div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">For International Bureau use only</div> <div style="display: flex; justify-content: space-between; align-items: flex-start; padding: 5px;"><div style="text-align: center;"><input type="checkbox"/> This sheet was received by the International Bureau on:</div><div style="width: 80%;"></div></div> <div style="display: flex; justify-content: space-between; align-items: flex-start; padding: 5px;"><div style="text-align: center;">Authorized officer</div><div style="width: 80%;"></div></div>
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What Is Claimed Is:

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group
5 consisting of:

(a) a polynucleotide fragment of SEQ ID NO:X or a polynucleotide fragment of the cDNA sequence included in ATCC Deposit No:Z, which is hybridizable to SEQ ID NO:X;

10 (b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA sequence included in ATCC Deposit No:Z, which is hybridizable to SEQ ID NO:X;

(c) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y or a polypeptide domain encoded by the cDNA sequence included in ATCC Deposit No:Z, which is hybridizable to SEQ ID NO:X;

15 (d) a polynucleotide encoding a polypeptide epitope of SEQ ID NO:Y or a polypeptide epitope encoded by the cDNA sequence included in ATCC Deposit No:Z, which is hybridizable to SEQ ID NO:X;

(e) a polynucleotide encoding a polypeptide of SEQ ID NO:Y or the cDNA sequence included in ATCC Deposit No:Z, which is hybridizable to SEQ ID NO:X,
20 having biological activity;

(f) a polynucleotide which is a variant of SEQ ID NO:X;

(g) a polynucleotide which is an allelic variant of SEQ ID NO:X;

(h) a polynucleotide which encodes a species homologue of the SEQ ID NO:Y;

25 (i) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(h), wherein said polynucleotide does not hybridize under stringent conditions to a nucleic acid molecule having a nucleotide sequence of only A residues or of only T residues.

2. The isolated nucleic acid molecule of claim 1, wherein the
30 polynucleotide fragment comprises a nucleotide sequence encoding a secreted protein.

3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO:Y or the polypeptide encoded by the cDNA sequence included
35 in ATCC Deposit No:Z, which is hybridizable to SEQ ID NO:X.

4. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO:X or the cDNA sequence included in ATCC Deposit No:Z, which is hybridizable to SEQ ID NO:X.

5

5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

10

6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

15

7. A recombinant vector comprising the isolated nucleic acid molecule of claim 1.

8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.

20

9. A recombinant host cell produced by the method of claim 8.

10. The recombinant host cell of claim 9 comprising vector sequences.

11. An isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

25

(a) a polypeptide fragment of SEQ ID NO:Y or the encoded sequence included in ATCC Deposit No:Z;

(b) a polypeptide fragment of SEQ ID NO:Y or the encoded sequence included in ATCC Deposit No:Z, having biological activity;

30

(c) a polypeptide domain of SEQ ID NO:Y or the encoded sequence included in ATCC Deposit No:Z;

(d) a polypeptide epitope of SEQ ID NO:Y or the encoded sequence included in ATCC Deposit No:Z;

35

(e) a secreted form of SEQ ID NO:Y or the encoded sequence included in ATCC Deposit No:Z;

(f) a full length protein of SEQ ID NO:Y or the encoded sequence included in ATCC Deposit No:Z;

- (g) a variant of SEQ ID NO:Y;
- (h) an allelic variant of SEQ ID NO:Y; or
- (i) a species homologue of the SEQ ID NO:Y.

5 12. The isolated polypeptide of claim 11, wherein the secreted form or the full length protein comprises sequential amino acid deletions from either the C-terminus or the N-terminus.

10 13. An isolated antibody that binds specifically to the isolated polypeptide of claim 11.

14. A recombinant host cell that expresses the isolated polypeptide of claim 11.

15 15. A method of making an isolated polypeptide comprising:
15 (a) culturing the recombinant host cell of claim 14 under conditions such that said polypeptide is expressed; and
 (b) recovering said polypeptide.

20 16. The polypeptide produced by claim 15.

17. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11 or the polynucleotide of claim 1.

25 18. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

 (a) determining the presence or absence of a mutation in the polynucleotide of claim 1; and
 (b) diagnosing a pathological condition or a susceptibility to a pathological
30 condition based on the presence or absence of said mutation.

19. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

35 (a) determining the presence or amount of expression of the polypeptide of claim 11 in a biological sample; and
 (b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.

20. A method for identifying a binding partner to the polypeptide of claim 11 comprising:

- 5 (a) contacting the polypeptide of claim 11 with a binding partner; and
(b) determining whether the binding partner effects an activity of the polypeptide.

21. The gene corresponding to the cDNA sequence of SEQ ID NO:Y.

10 22. A method of identifying an activity in a biological assay, wherein the method comprises:

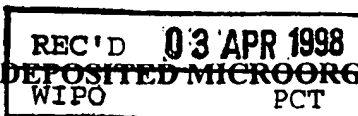
- (a) expressing SEQ ID NO:X in a cell;
(b) isolating the supernatant;
(c) detecting an activity in a biological assay; and
15 (d) identifying the protein in the supernatant having the activity.

23. The product produced by the method of claim 22.

Applicant's or agent's file reference number	PS001PCT	International application No. Unassigned
		PC 15 08/04493

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)



A. The indications made below relate to the microorganism referred to in the description on page <u>160</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>February 26, 1997</u>	Accession Number <u>97904</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications. e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input checked="" type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer <u>Stephane</u>	Authorized officer

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

Page 2

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file
reference number

PS002PCT

International application No. Unassigned

PCT US 98/04493

REC'D 03 APR 1998

WIPO
PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description
on page 116, line N/A

B. IDENTIFICATION OF DEPOSIT

Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution (including postal code and country)

12301 Parklawn Drive
Rockville, Maryland 20852
United States of America

Date of deposit May 15, 1997

Accession Number 209043

C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet ☐

In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)

E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)

The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")

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Authorized officer

Susan White
PCT International Division

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Authorized officer

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

Page 2

UNITED KINGDOM

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DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

REC'D 03 APR 1998

WIPO

PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>116</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>February 26, 1997</u>	Accession Number <u>97897</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
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PCT International Division

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CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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Page 2

UNITED KINGDOM

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Applicant's or agent's file
reference number

PS002PCT

International application No. Unassigned

PCT JS 98/04493

REC'D 03 APR 1998

WIPO

PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description

on page 119, line N/A

B. IDENTIFICATION OF DEPOSIT

Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution (including postal code and country)

12301 Parklawn Drive
Rockville, Maryland 20852
United States of America

Date of deposit September 4, 1997

Accession Number 209235

C. ADDITIONAL INDICATIONS (leave blank if not applicable)

This information is continued on an additional sheet ☐

In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)

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NETHERLANDS

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REC'D 03 APR 1998

WIPO

PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page 122, line N/A	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209044
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
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CANADA

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REC'D 03 APR 1998

WIPO
MICROORGANISM

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description

on page 122, line N/A

B. IDENTIFICATION OF DEPOSIT

Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution (including postal code and country)

12301 Parklawn Drive
Rockville, Maryland 20852
United States of America

Date of deposit February 26, 1997

Accession Number 97898

C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet ☐

In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

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CANADA

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UNITED KINGDOM

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REC'D 03 APR 1998

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>126</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>May 15, 1997</u>	Accession Number <u>209045</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
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REC'D 03 APR 1998

WIPO

PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

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B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>February 26, 1997</u>	Accession Number <u>97899</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
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NETHERLANDS

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REC'D 03 APR 1998

WIPO PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>130</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>April 28, 1997</u>	Accession Number <u>209011</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (If the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

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PCT International Division

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CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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Page 2

UNITED KINGDOM

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DENMARK

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NETHERLANDS

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REC'D 03 APR 1998

WIPO

PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description
on page 131, line N/A

B. IDENTIFICATION OF DEPOSITFurther deposits are identified on an additional sheet ☒Name of depositary institution American Type Culture Collection

Address of depositary institution (including postal code and country)

12301 Parklawn Drive
Rockville, Maryland 20852
United States of America

Date of deposit May 15, 1997Accession Number 209046**C. ADDITIONAL INDICATIONS** (leave blank if not applicable) This information is continued on an additional sheet ☐

In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

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CANADA

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NORWAY

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FINLAND

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Page 2

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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REC'D 03 APR 1998

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>131</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>February 26, 1997</u>	Accession Number <u>97900</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
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CANADA

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NORWAY

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AUSTRALIA

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FINLAND

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Page 2**UNITED KINGDOM**

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DENMARK

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NETHERLANDS

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REC'D 03 APR 1998

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PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>137</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>May 22, 1997</u>	Accession Number <u>209076</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
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CANADA

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NORWAY

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FINLAND

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Page 2

UNITED KINGDOM

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DENMARK

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REC'D 03 APR 1998

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

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B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>May 15, 1997</u>	Accession Number <u>209047</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
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CANADA

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Page 2

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REC'D 03 APR 1998

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page 137, line N/A	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit February 26, 1997	Accession Number 97901
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
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CANADA

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NORWAY

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AUSTRALIA

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FINLAND

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Page 2**UNITED KINGDOM**

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DENMARK

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NETHERLANDS

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REC'D 03 APR 1998

WIPO PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>140</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>August 21, 1997</u>	Accession Number <u>209215</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

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Susan White
PCT International Division

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CANADA

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Page 2**UNITED KINGDOM**

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REC'D 03 APR 1998

WIPO

PCT

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(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>142</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>June 12, 1997</u>	Accession Number <u>209119</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
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PCT International Division

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CANADA

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Page 2

UNITED KINGDOM

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Applicant's or agent's file
reference number

PS002PCT

International application No. Unassigned

PC US 98/04493

REC'D 03 APR 1998

WIPO

PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description

on page 142, line N/A

B. IDENTIFICATION OF DEPOSIT

Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution (including postal code and country)

12301 Parklawn Drive
Rockville, Maryland 20852
United States of America

Date of deposit February 12, 1998

Accession Number 209627

C. ADDITIONAL INDICATIONS (leave blank if not applicable)

This information is continued on an additional sheet ☐

In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)

E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)

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PCT International Division

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CANADA

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FINLAND

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UNITED KINGDOM

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REC'D 03 APR 1998

WIPO

PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description
on page 146, line N/A

B. IDENTIFICATION OF DEPOSIT

Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution (including postal code and country)

12301 Parklawn Drive
Rockville, Maryland 20852
United States of America

Date of deposit May 15, 1997

Accession Number 209048

C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet ☐

In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)

E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)

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Page 2

UNITED KINGDOM

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REC'D 03 APR 1998

WIPO PCT

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(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>146</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>February 26, 1997</u>	Accession Number <u>97902</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
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Authorized officer Susan White PCT International Division	Authorized officer

CANADA

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UNITED KINGDOM

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

REC'D 03 APR 1998

WIPO

PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>153</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>May 15, 1997</u>	Accession Number <u>209049</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications, e.g., "Accession Number of Deposit")	

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PCT International Division

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CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

Page 2

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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REC'D 03 APR 1998

WIPO

PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description
on page 153, line N/A

B. IDENTIFICATION OF DEPOSIT

Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution (including postal code and country)

12301 Parklawn Drive
Rockville, Maryland 20852
United States of America

Date of deposit February 26, 1997

Accession Number 97903

C. ADDITIONAL INDICATIONS (leave blank if not applicable)

This information is continued on an additional sheet ☐

In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)

E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)

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CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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Page 2

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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REC'D 03 APR 1998

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PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>154</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>12301 Parklawn Drive</u> <u>Rockville, Maryland 20852</u> <u>United States of America</u>	
Date of deposit <u>July 3, 1997</u>	Accession Number <u>209139</u>
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
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CANADA

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NORWAY

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FINLAND

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Page 2

UNITED KINGDOM

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REC'D 03 APR 1998

WIPO PCT

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page 160, line N/A	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 12301 Parklawn Drive Rockville, Maryland 20852 United States of America	
Date of deposit May 15, 1997	Accession Number 209050
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
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CANADA

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Page 2

UNITED KINGDOM

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NETHERLANDS

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